

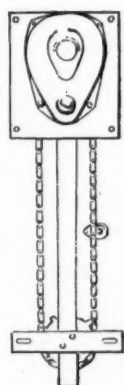
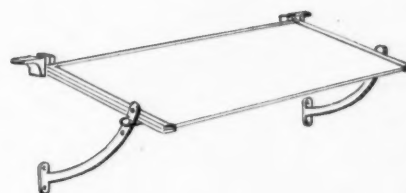
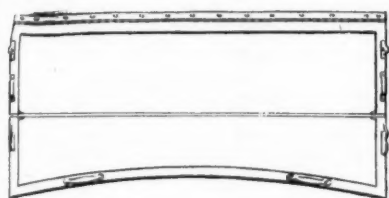
AUTOMOTIVE INDUSTRIES

The AUTOMOBILE

Vol. XLVII
Number 17

PUBLISHED WEEKLY AT 239 WEST 39th STREET
NEW YORK, OCTOBER 26, 1922

Thirty-five cents a copy
Three dollars a year

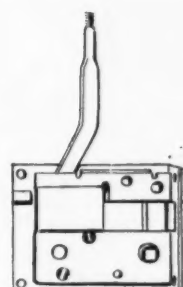
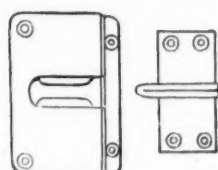


TERNSTEDT

*Largest Manufacturers of Automobile
Body Hardware in the World*

THE large and constantly increasing number of the world's leading motor cars that carry Ternstedt body hardware as **exclusive** equipment attests to the confidence placed in Ternstedt design and manufacture.

Builders of better bodies appreciate the **enduring** worth of Ternstedt proved-in-service products.



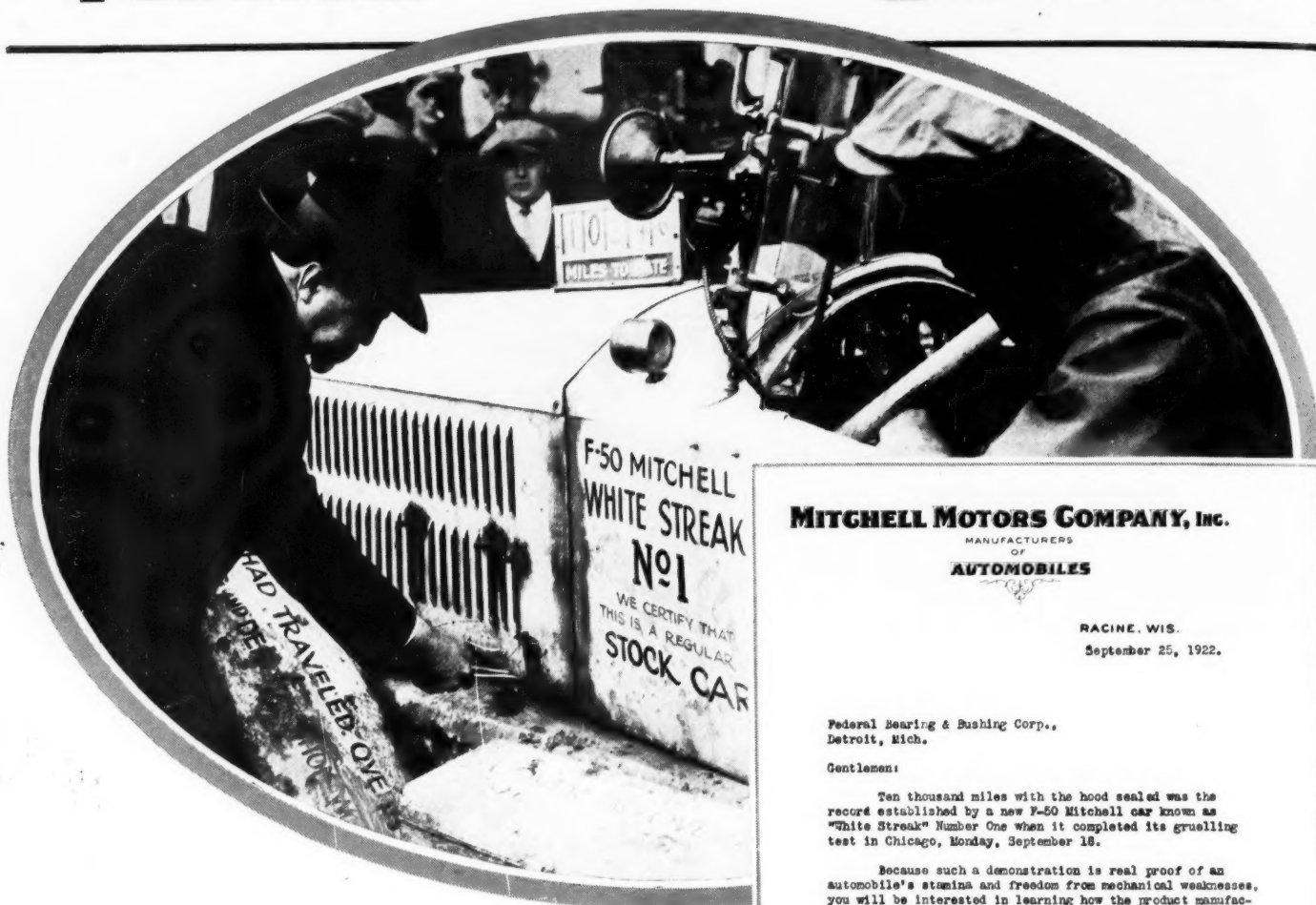
TERNSTEDT MANUFACTURING COMPANY
6307 FORT STREET, WEST DETROIT

Division of Fisher Body Corporation



FEDERAL

BEARINGS



Federal Bearings Again Demonstrate Their Leadership

Performance Such as This Tells Why the Professional Opinion of Leading Engineers and Manufacturers So Strongly Favors These Famous Bearings

FOR years the most critical engineers and manufacturers have granted first position to Federal Bearings.

Within the industry it has been general knowledge that these famous bearings set the standard by which all bearings must be judged.

In themselves inconspicuous in that they do their work unseen, still every engineer and manufacturer knows that no single element in a motor is of more importance than the bearings.

The widespread confidence in Federal Bearings finds practical expression in the fact that these bearings are used by such successful and representative manufacturers as Rolls Royce, Packard, Hudson, Essex, Wills Sainte Claire, Paige, Maxwell, Chevrolet and a score of others.

MITCHELL MOTORS COMPANY, Inc. MANUFACTURERS OF AUTOMOBILES

RACINE, WIS.
September 25, 1922.

Federal Bearing & Bushing Corp.,
Detroit, Mich.

Gentlemen:

Ten thousand miles with the hood sealed was the record established by a new F-50 Mitchell car known as "White Streak" Number One when it completed its grueling test in Chicago, Monday, September 18.

Because such a demonstration is real proof of an automobile's stamina and freedom from mechanical weaknesses, you will be interested in learning how the product manufactured by your company assisted in making this remarkable run 100% successful.

When the hood was officially opened by Dr. John Dill Robertson, President of the Chicago Pageant of Progress, the motor was running as smoothly and powerfully as when this car left the factory June 4th.

We are proud of the record that the new Mitchell F-50 has made for itself in this and other demonstrations which have covered more than a million miles during the past four months, and we attribute a goodly share of the success of our car to the bronze-backed bearings made by the Federal Bearing and Bushing Corp., which we use as standard equipment for both crankshaft and camshaft.

When an examination of "Ten Thousand Mile Sealed Hood Car" Number One was made by our engineering department at the conclusion of the run, we found that the Federal bearings were as tight and sound as new.

Very truly yours,

MITCHELL MOTORS COMPANY, INC.

FJSM:J

[Signature]
F. J. Stenberg,
Chief Engineer.



The Engineers of the Federal Bearing and Bushing Corporation are at your service with reference to your requirements. You are invited to write for any desired details.

FEDERAL BEARING & BUSHING CORPORATION

BABBITT-LINED BRONZE-BACK BEARINGS - BRONZE BUSHINGS - BRONZE CASTINGS
DETROIT - MICHIGAN

AUTOMOTIVE INDUSTRIES

The AUTOMOBILE

VOL. XLVII

NEW YORK—THURSDAY, OCTOBER 26, 1922

No. 17

Sales Methods Must Be Improved to Meet Competition

Economies in production and betterment of design will not go far unless backed by efficient selling force. Present efforts of manufacturers to expand dealer organizations are all directed at practically the same men.

By James Dalton

COMPETITION in the sale of automotive products has become exceedingly keen and there is every reason to believe that it will rage even more furiously in future, but there are no indications that any one expects to resort to the use of poison gas or any other "cut-throat" practices. Up to this time, at least, the battle has been fought in the open and only legitimate tactics have been employed.

The first line of defense in this conflict is the sales organization. Those which are well intrenched are in the best position to repel attacks. There will be constant need for reinforcements, however, and every company engaged will be forehanded if it opens a training camp for recruits. It will be unwise to depend entirely upon deserters from other companies for replacement purposes. These men will fight heroically but there naturally will be many casualties and the forces in line eventually will be exterminated unless new blood is enlisted.

Company executive staffs may work out the strategy for this battle, but the responsibility for executing the orders and seizing opportunities which may arise unexpectedly, will rest upon the sales manager. He must be a resourceful person or he will be forced to retreat. The plans he works out for augmenting the forces under his command and converting them into

shock troops will determine, in most cases, whether his company is to advance or retreat.

This general condition applies not only to the sale of passenger cars and trucks, but also to those parts and accessories which are handled through dealers and jobbers. A good many thousand men are engaged in the sales armies, but there aren't nearly enough if the fight is to be carried to the door of every family in America, as it seems likely to be.

There is no such thing as plumbing the depth of the automotive market. Next to the necessities of life—food, fuel, clothing and shelter—there is a greater market for automotive products than for anything else. Even to-day one person in every ten is a potential purchaser.

In the lowest price class, at least, even the motor vehicle has ceased to be a specialty and has become a commodity. Almost every kind of automotive equipment is in the same category. One of the wise men of the industry is authority for the statement that the time has come when these products must be handled on a commodity rather than a specialty basis and that profits must be measured accordingly. He meant that the success or failure of the dealer must be determined, not by the size of his profit on each unit, but by the number of units he sells. In other

words, he must carry on his merchandising along the same lines as the grocer or the hardware dealer and depend upon the frequency of his turnover for his profits.

IF this is true, and the opinion seems to be shared by many of the thinkers of the industry, it means the revolutionizing of production and sales methods. No less an authority than W. C. Durant said in a recent interview with *Automotive Industries*:

"Out of the present chaotic situation will emerge a completely new character of motor production and distribution with old methods ruthlessly cast aside and replaced by a system based upon competency, experience and sound judgment."

While he did not say so in so many words, it was evident Durant had in mind a survival of the fittest and the failure of those who have shared, up to this time, in the general prosperity of the industry because of a demand which made possible the sale of anything that would run on four wheels with gasoline motive power.

Of similar tenor is the statement of F. E. Moskovics that "the day is rapidly approaching when the fundamental economics of production and design will dictate which concerns shall survive."

The most profound research and the longest possible strides forward in the way of economical production will mean nothing, however, unless they are backed up by a competent sales organization. It is these men on the firing line who will determine the volume of business. If they simply are order takers who don't know how to sell, if they can't make two prospects sprout where only one grew before, if they don't know how to handle trades or time sales so there's a profit in them, then the companies which they represent will have to fall back in the battle for business.

Dealer organizations are the very life blood of the industry. A good dealer can't sell a poor product as successfully as a poor dealer can sell a good product, but with two products of equal value the able merchandiser can quickly leave his competitor in the ruck and he'll get a lot of business even with his second-rate proposition.

It undoubtedly is true, however, that the companies turning out the most popular automotive products have the least difficulty in attracting the ablest merchandisers. When they go out after recruits they seldom have much difficulty in getting them. This puts them in a strong strategic position to move ahead in the fight for business. If there were an abundance of good dealers these companies would have no trouble in getting all they wanted, but competition among these strong companies is becoming hotter every day and all of them are expanding their sales organizations as rapidly as possible. This means that they, too, will have to train recruits if they are going to keep their shock forces up to battle strength.

Practically every passenger car and truck company in the field is striving to strengthen its dealer corps. Some of them are seeking hundreds of additional representatives. The sales manager of one passenger car is making up a card index showing all the essential data about

every town in the country with a population of 1000 or more. These cards tell about the banking, business, agricultural and industrial resources of all these places and in addition they will give the names and present connections of the most successful dealers. All these dealers will be given invitations to switch over to the company which is compiling the data. Other companies also are getting dealer lists from every possible source and will sign up as many of them as possible.

The trouble with these efforts to enlarge sales forces is that they are directed at practically the same men, which means that there is a constant shifting about, although a small army of camp followers have drifted into the industry as the result of the enormous business of the past few months.

Many of those dealers who failed to weather the storm of depression which began in 1920 and fell by the wayside because they were weak financially or because they were simply order takers and did not know how to sell when business was slack, are coming back. Some of them have picked up a shoe string of capital and they are getting franchises because they profess to know all about the retail sales of automobiles. They may be able to ride along on the tide so long as business is good but if there is another slump they will blow up again.

It should not be assumed, however, that all the dealers who failed during the period of depression lost out because of lack of ability. Hundreds of them were confronted with difficulties which were absolutely insuperable and were beaten only after a gallant fight. Such men as these are entitled to another trial and another chance.

There are some other recruits who have been successful in other lines of merchandising but who know little or nothing of motor vehicles. They are the ones, nevertheless, who must furnish the new blood for the sales organizations of the industry. The sales manager who selects such men with care and trains them painstakingly will be doing his company a genuine service.

If a man has made a real success of retailing in almost any line, if he is well grounded in the fundamentals of merchandising and if he is adaptable, the chances are that he will make a successful automobile dealer if he has a reasonable amount of capital and if he is given a few weeks' careful training.

THE smaller production companies which cannot offer their dealers a large demand before they start might recruit largely from these two classes. As it stands now about the only bait they have to offer successful salesmen is a long discount and this cuts deeply into their profits.

There probably are a good many companies to-day which are striving for national distribution which would be doing vastly better if they were concentrating their sales efforts on a comparatively small territory. This would enable them to intensify their sales effort, keep a closer check on the operations of their sales organizations, give dealers much practical help and assure the

THE contest for sales is going to be literally heart breaking. The victory will go to those concerns which can turn out the best product at the lowest price by dint of manufacturing efficiency and economy plus the devoted efforts of a loyal, capable and energetic sales organization.

The most profound research and the longest possible strides forward in the way of economical production will mean nothing, unless they are backed up by a competent sales organization. It is the men on the firing line who will determine the volume of business.

purchasers of their products more satisfactory service.

Some of these concerns have spread themselves out too thin. They have strained their resources to the breaking point by trying desperately to increase their production when they would have been far better off with a more substantial profit on a smaller output. They might have done better if they had expanded their sales territory only when they encountered a spontaneous demand for their products instead of trying to force a demand.

THIS applies not only to motor vehicles but to accessories and equipment. A considerable proportion of the dealers who handle equipment are garage men who are primarily mechanics and mighty good mechanics at that. Circumstances have led them into retailing, however, and they know little of merchandising. If they are left to their own resources they won't progress very fast, but it is entirely possible to educate a good many of them if intelligent effort is put forth. On the other hand, a good many of them never will be anything but mechanics. This problem has arisen because the automobile and most of the things which go with it are mechanical devices and have been considered in the past almost exclusively as specialties.

With the present enormous production of motor cars, especially in the price classes under \$1000, it is quite logical to class them as commodities. The success or failure of these companies in future will be almost entirely dependent on their ability to turn over a huge volume of sales in a year. The contest among them for sales will be literally heart breaking. The victory will go to those which can turn out the best product at the lowest price by dint of manufacturing efficiency and economy plus the devoted efforts of a loyal, capable and energetic sales organization.

The profit per unit must be small both for the manufacturer and the dealer. The individual dealer cannot live unless he is able to turn his capital over several times a year. It is absolutely essential, therefore, that he should be a sound merchandiser. If the factory has many men in its organization who are not, it will suffer seriously. No further argument should be needed to emphasize the importance of selecting dealers cautiously and educating them carefully. They must sell in large quantities, but they must sell at a profit. They can't

afford to trade recklessly, for example, and the factory can't afford to have them.

In the medium motor car price class competition will be almost as keen, but these automobiles will not be handled so much on a commodity as a specialty basis and the profits on each unit will be somewhat longer. By the same token the dealer discount will have to be a little larger. There will be a fierce battle for sales, nevertheless, and it is equally important that these companies should have real merchandisers as dealers for they will have a greater temptation to ruin themselves by overallowances in trading.

What applies to passenger cars applies with equal or greater force to trucks. The volume of sales at present is only about one-tenth as large and for that reason it is even more difficult to get competent dealers. Trading is an even greater curse and it must be confessed that the factories themselves are fully as serious offenders as the individual dealers. Education of dealers is even more essential in the truck than in the passenger car field and the well known psychological moment has arrived to undertake it for the surface of the truck market has scarcely been scratched. Compared with present output, demand will increase much more rapidly than for passenger cars. Those companies best fortified with strong dealer organizations will be the ones which will profit most from this enlarged volume of business.

THE same situation exists to a greater or less degree in all branches of the parts and accessory business. Those companies turning out products for which there is the largest and most insistent demand will have to put themselves on a commodity basis and be content with a small profit per unit. They will have to expand and strengthen their dealer organizations and they will have to seek constantly for new outlets for their goods. They must devote more and more attention to the replacement market, either through the jobbers or their own dealers. They, too, must learn how to educate their dealers and their problem in this respect is even greater than that of the motor vehicle manufacturer for they are dependent to a greater extent upon the good-will and the selling ability of the man in the service station who is primarily a mechanic.

A Packard Dirigible Engine

IN the construction of the type ZR-1 rigid airship, the Bureau of Aeronautics of the Navy Department has insisted on maximum durability and fuel economy. This is necessary because of the desire to secure the ability for a long stay in the air and long cruising periods for this ship. The equipment for this airship will be six engines of 300 hp., giving a total of 1800 hp. A contract has been entered with Packard Motor Car Co. to manufacture the engines of this class. They are to be known as Packard model 1A-1551, and are of the six-cylinder, water-cooled type. These engines have a bore of 6 $\frac{5}{8}$ in. and a stroke of 7 $\frac{1}{2}$ in., with a rated hp. of 300 at 1400 r.p.m.

The reduction and reverse gear is made by the Allison Engineering Co. This gear is a combined clutch and reduction gear, the clutch being a multiple disk type and the reduction gear planetary. The gear reduction permits a propeller speed of 550 r.p.m. when the engine

is turning 1400 r.p.m. The use of the clutch is to permit the engine to be cranked in the hangar without turning the propeller. The gear is fitted with a brake which holds the propeller when the clutch is disengaged.

To determine the durability characteristics of this engine, an endurance test of 300 hr. has recently been successfully conducted. The engine was mounted on a torque stand under a shed, open at both ends. Driving a calibrated pitch club it was run at power corresponding to that necessary for cruising speeds; that is, 250 b.h.p. at 1400 r.p.m., at normal cruising altitudes, 6000 ft. At the end of the 110th hour, the engine was given a wide open throttle run and developed 350 b.h.p. at 1555 r.p.m. In order to determine whether any power loss had resulted the engine was again opened up at the 300th hour and developed 365 b.h.p. at 1577 r.p.m. The fuel consumption for the entire 300 hours was .436 lb. per b.h.p.

Tractor Makers Assert They Can't Cut Their Prices Now

Declare increased cost of raw materials makes reductions at this time impossible. Manufacturers assert at Chicago convention they don't expect highly profitable business before 1924. Hold farm products prices are still too low.

By David Beecroft

CHICAGO, Oct. 20.

MANUFACTURERS of farm equipment machinery do not believe that there will be a return of highly profitable business for them before 1924, according to predictions made at the twenty-ninth annual convention of the National Association of Farm Equipment Manufacturers which closed here to-day.

They base their contention upon the assertion that recent increases in the cost of raw materials have made impossible any price reduction to purchasers and that the farmer is not yet ready to come into the market in large numbers because the prices he is receiving for his crops are not commensurate with what he has to pay for the commodities he must buy.

The views of the manufacturers were voiced by F. R. Todd, vice-president of Deere & Co., who declared that the farm equipment business had approximated only about 33 per cent of normal since the depression began two years ago. The present demand from the farmer is scarcely 50 per cent of normal, although there has been a substantial increase in sales in the past three months.

The farmer is still out of step with the rest of the world in prices received for his products in comparison with what he has to pay for his necessities. The profits which should have been his because of the increase in grain prices in the last two months have been lost in part through a lack of transportation to get his grain on the market. The higher prices have gone very largely into increased water rates or to brokers, elevator proprietors or others in direct control of the grain supplies.

The farmer's dollar is only a 64 cent dollar compared with its pre-war buying power and the increase in the price of raw materials entering into farm machinery from 61.5 per cent above pre-war levels on March 1, 1922, to 99.9 per cent above the 1914 level on Oct. 6, 1922, indicates that 1923 has little chance of being a profitable year for them and that the farmer can look for little in the way of price reductions. An increase of 10 to 20 per cent in prices would normally be the answer to the recent rise in raw material prices.

NONE of the manufacturers attending the convention would subscribe to a price increase, however, and this view was shared by the representatives of sixteen farm machinery dealer associations who have been meeting of their own annual convention in Chicago. During 1922 these manufacturers and dealers have written off losses, their inventories are not all completely liquidated and they

have set their backs to the wall to face another season of exceedingly lean profits before the opening of 1924, when they believe the farmer must buy, even if unusual financing must be resorted to in assisting him, because stocks of machinery in warehouses and factories are running low and what the farmer has is wearing out. He has been repairing and borrowing from his neighbor for two years, a program which it would seem cannot continue more than one year longer.

The farmer has been a lean buyer of equipment since 1913. A carefully conducted survey shows that in no year since then has the tonnage of implements consumed exceeded that pre-war year and with the single exception of 1920 each year has shown a decrease compared with 1913. The one outstanding exception in the farm machinery classification has been farm tractors.

TODD is of the opinion that the farmer has yet ahead of him days in which he must use still greater discrimination in purchases than he has during the past season and that before he gets back to a prosperity standard he must buy farm machinery so as to make his land cultivation more profitable. To do this he will have to discontinue the purchase of other products that may be less essential to this end. He said.

"It is a notable fact that during the last two years the farmer has tended to curtail his implement buying to a larger extent than he has his purchase of many less essential commodities. As the expenditures of the farmer must come either from his savings of the past or his earnings in the present, and as expenditure for luxuries, in the majority of cases, will soon exceed the accumulations from past effort, we must inevitably reach the conclusion that, with his curtailed buying power he is soon going to find it necessary to use such resources as he has to buy the equipment essential to farm operation.

"It also is beyond question that, with the decreased value of a unit of crop, he must make every effort to increase production and at a decreased cost; in other words, when the farmer comes to calmly view the problems which are facing him, he is going to find that the maintenance of a satisfactory implement equipment is essential to his continued operation, and that labor-saving tools are more necessary with corn selling at 50 cents a bushel than when the price was \$1, because in his competition in the markets of the world he must be in position, from a cost standpoint, to produce every unit of his crop so that he can sell it at a profit."

As a result of this greater discrimination in purchases, Todd predicts that some industries, and he did not mention any of them, still have liquidation problems to face if they sell much of their products to farmers as the farmer will not have enough dollars to go around and must perforce become a discriminating buyer seeking only those products constituting the first line of necessity. Greater discrimination in this respect may be needed for 1923 than for 1922.

During the year farm implement prices have fallen from 50 per cent above pre-war levels on Jan. 1 to 42 per cent above at present. To-day farm products average 31 per cent above the 1914 level.

IT might be added here that a week ago Julius Barnes, president of the United States Chamber of Commerce, in addressing editors of business papers, commented on the fact that while grain prices have risen 15 cents per bushel in the past six weeks, most of this has been absorbed in increased freight rates on the Great Lakes, where some rates, Mr. Barnes stated, have risen from 2 to 15½ cents per bushel on travel west of Buffalo. By not participating directly in these grain price increases, the farmer has suffered a loss of \$400,000,000. Not only are the elevators of the country stocked but the railroads are inadequate to handle what is offered to them.

Samuel O. Dunn, editor of *Railway Age*, and a national authority on railroad affairs, declares that if all of the locomotives were in normal condition, the railroads still would not be in a position to handle anything like the quantities of freight offered.

Further, never in railroad history in America has there been a business improvement period where the railroads were not well prepared to more than care for the return of business, but to-day they are not, and the influence of this will be reflected through industries during the coming year. Not only is the farmer's return to purchasing normalcy being retarded by lack of railroad facilities but the crop value of 1921 was \$6,000,000,000 below that of 1920. When the 1922 crop value is fairly definitely computed, a more correct interpretation of the 1923 buying capacity can be made.

The extent to which increased freight rates are working against the farmer both in the purchase of farm equipment and in the price he receives for his grain can be illustrated by many specific examples.

A typical illustration, and a specific one also, relates to four essential pieces of farm machinery used by the Nebraska farmer and supplied by the Mississippi Valley manufacturer. In 1914, to transport a grain binder, a corn binder, a wagon and a disk plow from the maker to the farmer cost \$485, as compared with \$738 to-day. A year ago the cost was considerably more.

Referring to increased freight costs on many, if not on most, products furnished by the industry, Donald D. Conn, of the American Railway Association, in addressing the convention, declared that the distance all products have to be hauled has very greatly increased since pre-war days. In 1911 the average haul of all commodities on American railways was 258 miles. By October, 1921, it had jumped to 326 miles. Changes in producing areas were largely responsible for this increase. A specific instance showed how 10,000 carloads of vegetables and fresh fruits had an average transportation distance to market of 1400 miles.

THE ranks of the National Association of Farm Equipment Manufacturers are divided on the all-absorbing topic of prices advertised.

During and since the war few, if any, of the manufacturers have advertised f.o.b. factory prices, and to-day

the dealers are demanding a return to them for the purpose of reducing price cutting among their members. Few of the manufacturers seem ready to take the step, although some of the leaders are. The evils of not quoting an f.o.b. factory price were presented by Guy H. Hall, director of the National Institute of Progressive Farming, a publicity bureau maintained by the farm equipment manufacturers. Referring to this price question, Mr. Hall said:

"Some of our correspondents insist it is time for the farm implement and tractor men to put retail prices on their implements and advertise them, so that everybody knows what a cultivator, manure spreader or tractor costs the farmer. The dealer then can visualize a clear profit, and in canvassing his prospects for the coming year, work for the sale of all farming equipment needed in his territory. The mystery is eliminated for the farmer, and he gets away from the idea that he is paying for a piece of farm machinery, plus the freight from factory to farm, plus a profit for the dealer, plus so on and on. The farmer's products are priced each day. Why not his implements?"

"To illustrate this point: A farmer goes in to buy a Ford car. The price, he knows, is, let us say, \$525 f.o.b. Detroit. He knows he must pay the freight, which is perhaps \$20 additional. Then there is a little more for war tax. The deal is completed because the farmer knows the advertised price of the car and he also knows that he could go to every other dealer in his territory and the price would be the same.

"Suppose he wants a spreader. He asks his implement dealer what it costs and gets his answer after the dealer has figured it out from his old invoices. But he doesn't buy, simply because he doesn't have confidence that the quoted price is a fair one. He goes to another dealer; the price is a little different, because no two dealers, without an established price, figure their selling prices and overhead in the same way.

"THAT experience encourages him to shop around a little more. He comes back to the first dealer and tells him how much lower prices he can get some place else. Or, all the time he is comparing these various prices with mail order prices, which are the only prices printed in the catalog. This encourages price cutting. Price cutting is unprofitable and much of the dealer failures originate from this very cause."

The dealers not only request a factory f.o.b. price, but insist that no increase in prices must be made by manufacturers.

The farm equipment manufacturer has, by varying cash discounts to dealers, achieved what is equivalent to a 5 per cent increase in price. Some time ago the cash discount to dealers was changed from 5 to 10 per cent, equivalent to a 5 per cent price reduction. This discount has now been changed back to 5 per cent and is, from the factory viewpoint, equivalent to a 5 per cent price increase.

Discussing the lack of aggressive selling methods which he seemed to feel might be partly responsible for the present scarcity of business, Hall said:

"Those who have watched the industrial and financial developments of the past year know of the wonderful recovery of the automobile industry. These automobiles were sold largely to farmers, the same farmers that are supposed to be without buying power this year. The equipment that goes on those automobiles also have a record sale, and the stocks of the companies whose products sell largely to farmers are the sensation of the stock market.

"How come? Simple enough! The automobile people

had developed their dealers and the dealers had been made prosperous enough to give service. Hence, they were going out looking for the business, "asking 'em to buy!" if you please. You say the automobile has a universal appeal to every member of the family, women and children first. Right enough, but the tractor has, too, if it is presented right. In fact, the tractor should be sold as a means by which the farmer can own a *better* automobile, and in saving the time, inside and outside the house, not to mention the labor and feed saved that could be put into higher class live stock that would bring

bigger returns per acre of farm, so that the automobile could be bought and used in a *more* prosperous farm life.

"Why 'pan' the automobile as a deterrent to the buying of the farm machinery and tractors? The automobile has been a teacher of engineering to the farm boy, so that he demands the speediest and newest farm machinery for saving time in the field. It has blazed the path of the farmer to a new level of farm civilization, building the roads for trucks and revolutionizing farm life. Let 'em buy automobiles, better and better ones as they become more prosperous."

New Small Farm Tractor Has Air-Cooled Engine

A NEW small tractor is being produced by the Cameron Motors Corp. It is fitted with a Cameron four-cylinder air-cooled engine of 3¼-in. bore by 4½-in. stroke, rated at 12 hp. at 1000 r.p.m. A feature of the engine is the large sized crankshaft which is of the three-bearing type and measures 2 in. in diameter at every bearing. The cooling fan is driven by an inclosed silent chain and every part of the engine is automatically lubricated from the crankcase. Ignition is by a Splitdorf high tension magneto. A governor is built into the engine for speed control. The transmission case and lower part of the crankcase are in one casting, this tending to give a more rigid construction and to reduce the machining cost.

The tractor has two forward speeds and one reverse. All gears and shafts are of chrome nickel steel, heat-treated and mounted on annular ball bearings. The final drive is through large ring gears riveted to the two driving wheels and inclosed in a dust proof case containing an oil bath. The large wheel bearings are of the flexible roller type. The rims on the drive wheels can be demounted after removing six nuts, and a variety of rims can be furnished to suit different working conditions. The tractor can also be fitted with different tires for road work.

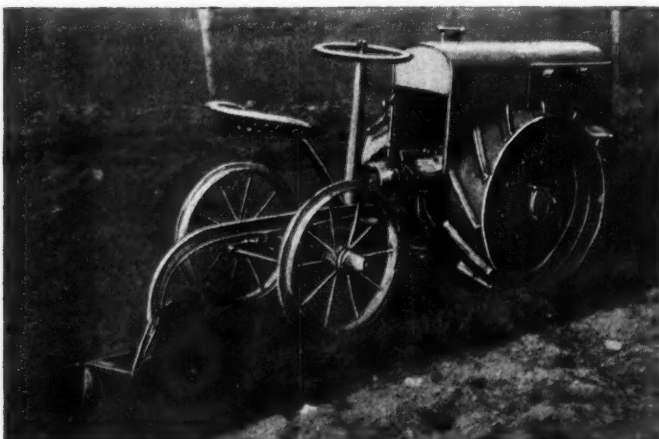
A power take-off pulley is provided at the rear, so that by disengaging the clutch the engine can be operated without load when the belt is on, and the belt load thrown on by engaging the clutch. It is stated that in belt work the governor closely regulates the engine speed, and a small hand lever is provided for increasing the tension

on the governor springs to increase the speed range if necessary.

In the photograph the tractor is shown equipped with a riding attachment which is standard equipment, but caster wheels and handles can also be furnished, which convert it into a walking tractor. The machine steers by the rear wheels and will turn in an 8-ft. circle. The fuel tank is of welded steel and holds 10 gals. It is mounted at the rear end of the hood and can be dismounted after taking out four bolts.

The total width of the machine here shown is 32 in., but when fitted with 5-in. rims for cultivating the total width is only 26 in. The height is 41 in. and the weight of the machine complete ready to operate, 1500 lb. Of this weight 1400 lb. rests on the front wheels when the machine is at rest, so that almost the whole weight is available for traction purposes.

The Cameron Motors Corp. also builds a 12-in. plow which attaches to the rear of the tractor and can be raised and lowered by a pedal. Provision is made for adjusting the depth of plowing. A mowing machine attachment for a 5-ft. cutter bar, and a line of cultivator tools and a spraying outfit are also made. The tractor alone sells for \$350.



Cameron tractor powered with four-cylinder air-cooled engine

SPARK PLUG manufacturers in the United States who would seek export business in the United Kingdom must make several minor changes in their product, if they are to compete successfully with the British manufacturer of plugs, according to advices to the automotive division of the U. S. Department of Commerce.

Practically all automobiles manufactured in the United Kingdom use metric thread spark plugs. The only demand for inch thread plugs is on American-made cars. But one American car has, as yet, appeared on the British market equipped with metric thread plugs. An 18-millimeter thread spark plug is generally accepted as standard in the British Isles.

The American exporter is also handicapped with a duty of 33⅓ per cent on his product. Despite this, practically all makes of plugs—American and British—sell at 5 shillings, or about \$1.10. In the case of wholesale prices British manufacturers give a larger discount than American manufacturers, the former allowing a discount of 50 per cent to jobbers and 40 per cent to dealers, against the American manufacturers' discount of 40 and 30 per cent respectively.

The British manufacturer's method of "putting up" his product is also considered superior. All plugs made in England are wrapped in paraffin paper and packed in a tin box sealed with a lead seal, which appeals to the buying public.

Continental Design Features Small Overhead Valve Engines

Paris Show finds European engineers seeking mechanical efficiency and low operating costs. Little attempt to reduce production costs through simplification of design. "Clean" engines noticeable. Four-wheel brakes on cars of all sizes.

By W. F. Bradley

UNDER the Continental definition an automobile is a vehicle having an engine with a piston displacement of more than 67 cu. in. Below this figure the vehicle is considered a cycle car, whatever its technical characteristics. It was on this basis that the Paris show this year was divided into two sections, automobiles being admitted into the Grand Palais and the cycle car displayed in the overflow section on the Esplanade des Invalides.

Considering the car section only, 185 Continental models were represented in the main hall of this year's Paris show. This number excludes British and American cars. There were only three of the former and General Motors were the only representatives of the American industry. Out of the 185 models there were 140 with four cylinder engines, 36 with six cylinders, 8 with eight cylinders and one with 12 cylinders. Makers of six cylinder engines were Alfa-Romeo, Ansaldo, Leon Bollee, Delage, Delahaye, Delaugere-Clayette, Delaunay - Belleville, Excelsior, Farman, Fiat, Hispano-Suiza, Laine, Lorraine-Dietrich, Mathis, Minerva, Omega, Paulet, Peugeot, Renault, Rochet-Schneider, Spa. The makers of eight cylinder engines are Bugatti, Dewald, Isotta-Fraschini, and Panhard-Levassor with all-in-line types, De Dion Bouton and Talbot-Darracq with V-type and Lancia with a narrow angle V-type. Fiat has the only 12-cylinder engine in the show, this being a very high grade product which made its first appearance a year ago and is about to go into production on a limited scale. Voisin has withdrawn his twelve. With the exception of the Lancia 20 degree V-type, all the fours and the sixes are vertical engines.

The average displacement of Continental engines is in the neighborhood of 160 cu. in. A wrong impression is obtained, however, if cars with engines of less than 67 cu. in. are ignored, for the majority of these are not cycle cars but small two-seater automobiles which are coming more and more into competition with bigger machines.

Putting the 67 cu. in. machines on one side, the tendency is towards a slight increase in engine size. Whereas a bore of 2½ in. was the generally accepted size for popular

four seater cars, there is now a tendency to increase this to 2.7 or 2.9 in. The desire for economy is as strong as ever, but there is a feeling that better all round results can be obtained by carrying the piston displacement of a four passenger car from 91 in. to about 122 in. With the smaller figure, track and wheelbase have to be cut down to a point which somewhat restricts the space for four passengers.

There is no change in the relative positions of sleeve valve and poppet valve engines. Although Knight patents are no longer valid in France, only one new sleeve valve engine, a Peugeot, has made its appearance. Makers who continue to use the sleeve valve engine are Minerva, Mors, Panhard-Levassor and Voisin.

Peugeot has just put on the market its two-cylinder two-stroke crude oil engine for passenger vehicles built according to Tartrais patents. This engine has been in use for truck and stationary work for about a year with such results that Peugeot feels justified in offering

it as a passenger car model. Probably its immediate application will be for colonial work, where it has the advantage of being able to consume any local liquid fuel.

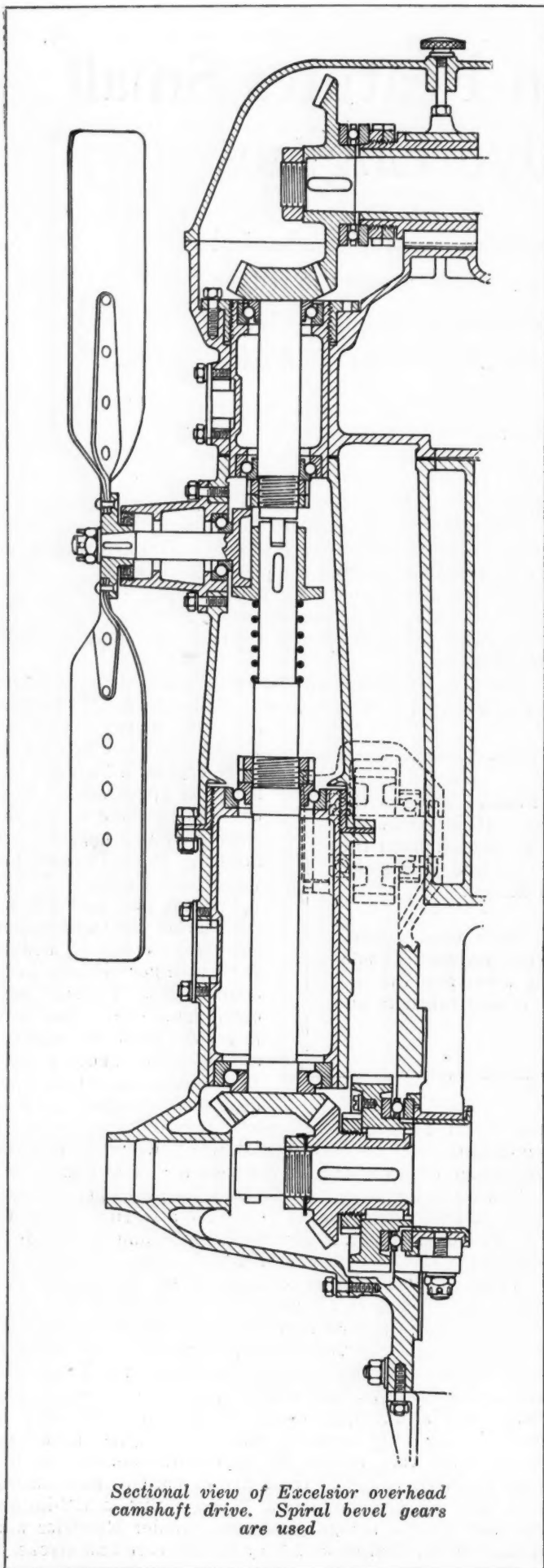
There are no two-stroke engines for passenger car service. Air cooling has received no attention above 67 cu. in. and below this size the only example is a four cylinder S.A.R.A. with centrifugal blower.

Valve in head engines are one of the features of the show, there being 72 of this type, of which 34 have overhead camshafts and 38 have camshafts in the base chamber. Although the two types are almost equal numerically, all the tendency seems to be toward the location of the camshaft in the base chamber, as being a cheaper and more satisfactory type except where super efficiency is desired. Generally speaking, where new engines have been brought out they are of the type with camshaft in the base chamber, although there are exceptions, such as the new light six Ansaldo, a new 122-in. Ballot, a 122-in. six cylinder Omega, a high grade six-cylinder Excelsior and a six cylinder Mathis of 2.3 by 2.7 in. bore and stroke.

IN this article W. F. Bradley reviews the Paris automobile show. He describes in detail engineering features appearing for the first time at this exhibition and points out the trend in Continental design.

* * *

Continental engineers have concentrated their attention on securing mechanical efficiency and low operating costs and the author tells what steps have been taken to obtain these advantages.



On the other side is a high grade six cylinder Fiat, which has its camshaft in the basechamber, camshaft drive by chain at the rear, a detachable head, pushrods and rocker arms. Another important example is De Dion Bouton which has changed from L-head type to overhead valves, with a detachable head, pushrods and rockers. On this model De Dion Bouton has forked end rocker arms with rollers in contact with the hardened caps on the end of the valve stems. Adjustment is at the opposite end where there is a ball headed pinch bolt received in the hollow end of the push rod. Oil running down the rocker arm collects in the socket. Two concentric coil springs are used for each valve. There are a few cases where this change has been made because of the manufacturing facility of a crankcase location compared with the overhead position. A six cylinder sporting type Delage is an example of this; one of the small De Dion Boutons, too, has been produced on these lines so that the same basechamber, camshaft and other parts could be used. In a few cases where new L-head engines have been produced the valves are inclined not only in relation to the cylinder barrel, but in relation to one another. The 11 hp. Delage is an example of this, and another of the same type is the new 12 hp. Hotchkiss.

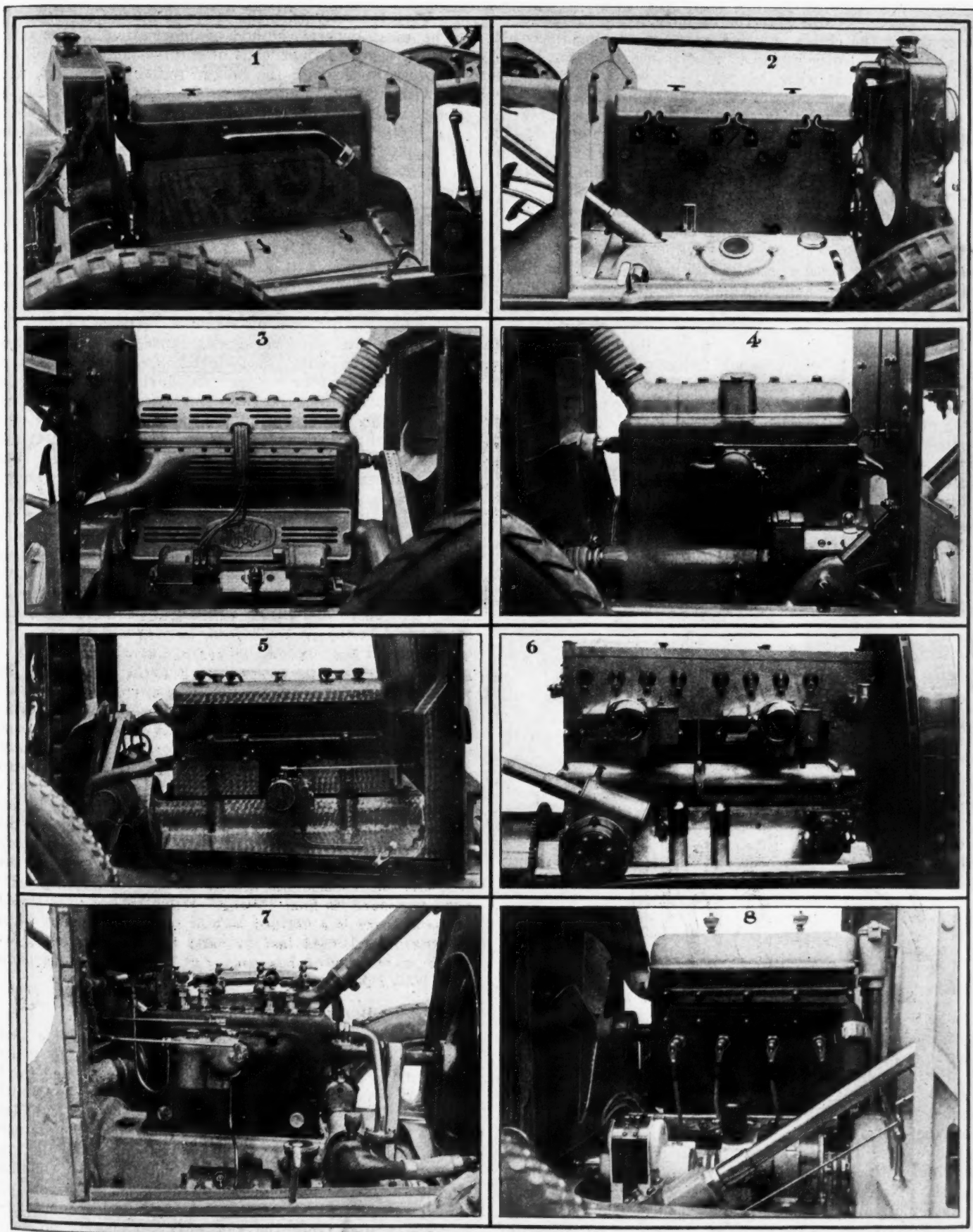
Use of Aluminum Pistons Increases

Aluminum pistons are used on 50.8 per cent of cars in the Paris show, and 49.2 per cent have either cast iron or steel pistons. Among the firms making use of iron pistons for their standard production are several who produce a modified type with aluminum pistons, an example being a sporting type Citroen, which is merely the normal car with lighter reciprocating parts, higher compression and special camshaft. Fiat adopts the same practice for its 10 hp. model, the normal car having iron pistons and the sporting models aluminum. This Italian firm, together with a few French makes, employs on certain models, aluminum pistons with a thin cast iron ring on the skirt, this ring alone bearing when the engine is cold and the whole length of the skirt when the aluminum has dilated. The feature of this development is that firms with a reputation for conservatism now announce a definite adoption of aluminum pistons in place of cast iron. These users comprise De Dion Bouton, Lancia, Panhard-Levassor, Unic and Voisin.

The latest development in pistons is the use of magnesium, which has a density of 1.75 compared with 2.5 for aluminum. Up to the present only three firms announce the use of this type of piston, and then only for sporting models. They are Voisin, Bignan, and Benjamin. The pistons are cast by the Montupet Co. according to the German process known as Elektron. Voisin and Bignan announce that results have been satisfactory and that cost alone prevents a more general use of magnesium pistons.

Cleaning Up Engines

The effort made to clean up still further the external lines of engines is a remarkable feature of this year's exhibits. Fiat has set an example in this respect on a new 3.3 by 5.9 in. six. Instead of a transverse shaft drive for magneto and water pump, the timing gear has been moved to the rear, and water pump, electric generator and magneto are in line on the left side of the engine between the crankcase hangers. A detachable aluminum plate covers up the whole of the space between the base of the cylinder casting and the frame member and gives a box like appearance to the engine. On the opposite side there is a similar arrangement for the carburetor and the steering gear, which are in the well formed by the



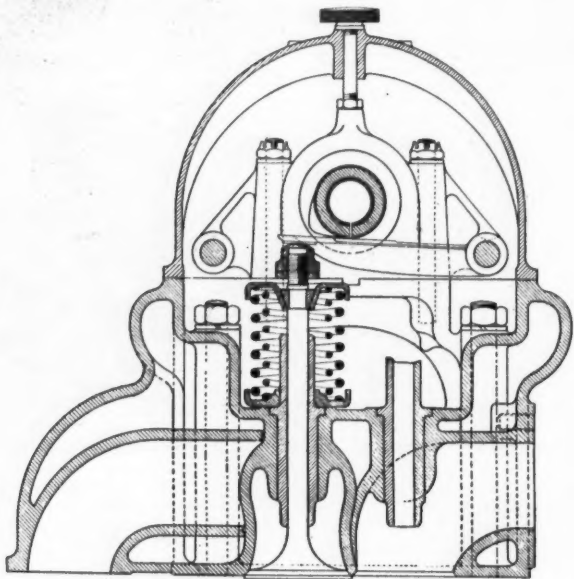
1—Fiat six-cylinder overhead valve engine, exhaust side. 2—Fiat engine, ignition side. 3—F. N. L-head engine with hinged cover over spark plugs. 4—F. N. engine showing oil filler on top. 5—Motorbloc engine with aluminum cover over spark plugs. 6—Bugatti eight-cylinder-in-line engine. 7—Delahaye engine with water jacket cover and inlet manifold in one casting. 8—Peugeot 11-hp. overhead valve engine

crankcase arms and enclosed by an aluminum cover with a wire gauze breather for the carbureter air intake.

Even on the cheap and moderate priced machines this practice can also be found to a certain extent, for if the design is laid out with this feature in view it adds little if anything to the cost. Among the many examples may be mentioned a new four cylinder Cottin-Desgouttes with battery ignition, the generator being mounted fore and aft between the crankcase hangers and covered by a sheet aluminum plate with an opening for the distributor and the wires.

As an example of how a normal L-head engine can be cleaned up no better example could be found than the new F.N. This engine has cylinders and crankcase in one casting with a straight ribbed exhaust manifold on the valve side, and above it a hinged cast aluminum cover enclosing the spark plugs and being symmetrical with the water outlet collector.

Another good example is a four cylinder Motobloc of the detachable L-head type which has a detachable aluminum cover over the engine head so as to enclose the plugs. On this engine the ignition wiring is external, for there is an extension from each plug passing through the aluminum cover, with a fibre bushing let into the holes to prevent short circuiting the current. The very general practice of internal intake manifold heated by the circulating water with a carbureter bolted up directly to the cylinder block tends towards clean external lines of engines. There are very few examples of direct use of the exhaust heat



Sectional view of Excelsior overhead valve gear

for the carbureter, and not many cases where the main air inlet is heated.

Hotchkiss shows an entirely new four cylinder model in which the intake manifold is immediately below the exhaust manifold and receives some heat from this latter, but before going into production it has been decided to change over the carbureter to the opposite side of the engine, with all the manifold going through the cylinder block. Note should be made of the practice on a certain number of cars of mounting the carbureter at the extremity of a straight intake manifold, instead of on the center.

The practice inaugurated by Hispano-Suiza of making the dashboard a close fit with the engine base chamber and the clutch housing and of fitting sheet aluminum extension pieces from the crankcase to beyond the edge of the frame members, and fastening the hold down to these plates has found a certain following. There is a good ex-

ample on a 122 in. six-cylinder Omega, built by engineers who were formerly with the Hispano-Suiza Co.

The most general method of lubrication of the overhead valve gear is by means of a direct supply of oil under pressure through the hollow rocker arm shaft, usually without any direct feed to the ends of the rocker in contact with the valve stem and the push rods. Excelsior on a high-class type, with overhead camshaft, takes the oil supply under pressure through the hollow camshaft and provides an outlet through the face of each cam and the follower just before the cam begins to open the valve.

Positive Valve Operation

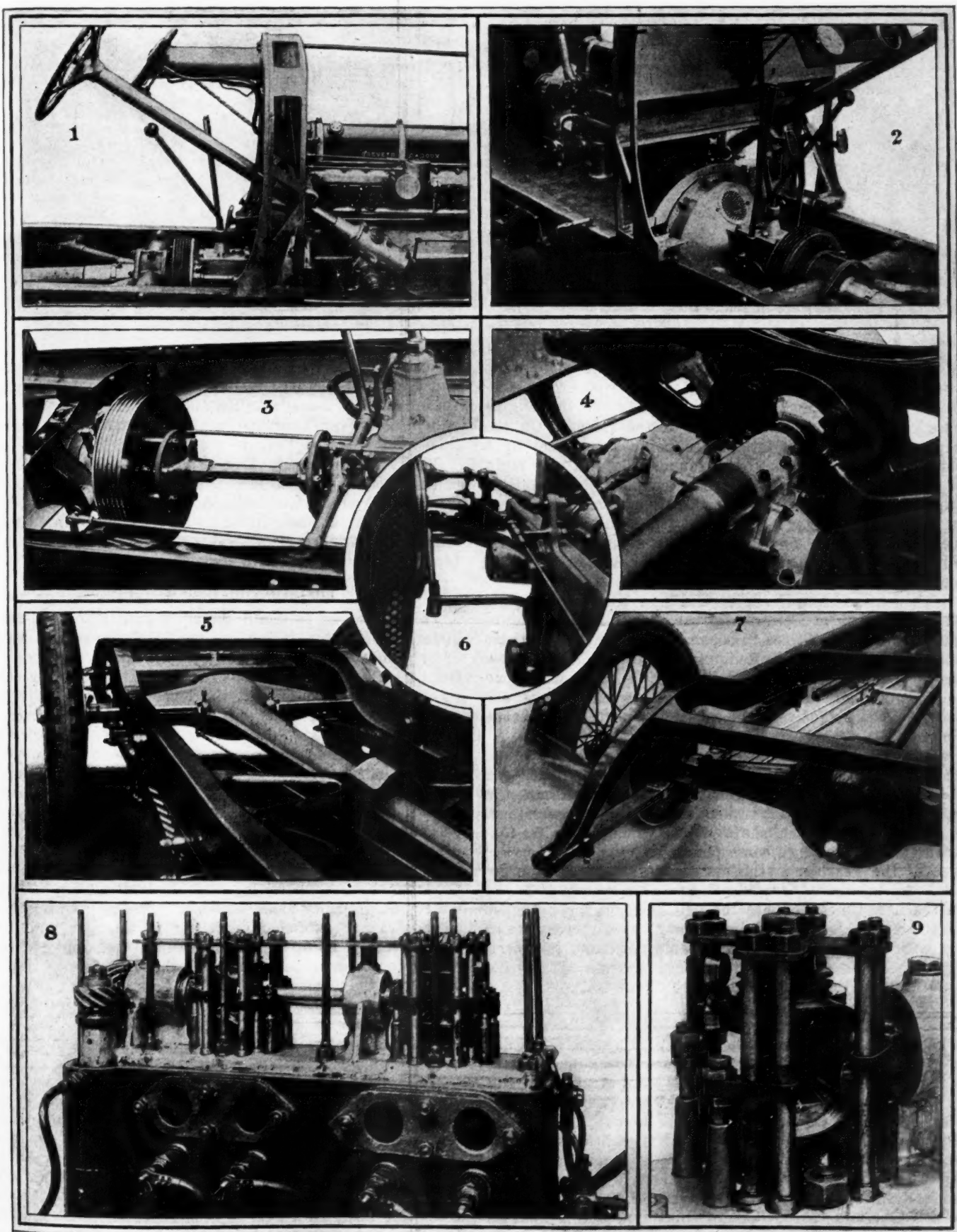
Probably the most original of the valve gears seen at the Paris show is the positive opening and closing type used on the Bignan cars. In this design the valves are mounted vertically in a detachable cylinder head and are spaced out in the form of a square. The cams, two for each group of four valves, are one above the other, mounted on a vertical shaft in the center of the square formed by the four valves. A horizontal shaft with bevel gearing drives the two cams in opposite directions.

The method of operating the valves is by means of a T-piece with a hollow stem, this latter having a couple of horizontal studs each receiving a conical roller. The cross member of the T-piece is drilled at each extremity, one of these holes receiving the end of the valve stem, which is locked to it by a nut above and below, and the other being a guide. The T member is mounted on a stud screwed into the cylinder head. There are two of these studs for each valve, one receiving the central stem of the T-piece and the other the cross member of the T. The eight studs are united at their upper ends by a flat start piece bolted on the top of the vertical shaft carrying the bevel gearing. As no springs at all are used, it is possible to make the reciprocating parts very light, the valve stems being much smaller in diameter than is usual for spring controlled valves. It has been found that with this mechanism it is necessary to leave a certain amount of play between cam and rollers, for if the adjustment is so close that the valve is brought positively down onto its seat the stem breaks after running a short time. Others have attempted to overcome this difficulty by interposing a light coil spring for the final closing, but the Bignan engineers declare that they get very satisfactory results by leaving a small amount of play between the cam and the rollers, the inertia of the valve being sufficient to assure its final seating. When turned over slowly by hand there is a decided lack of compression, but when the engine is turned fast by hand full compression is secured. This engine has been run satisfactorily at more than 5000 r.p.m.

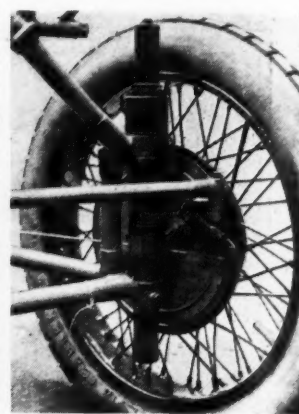
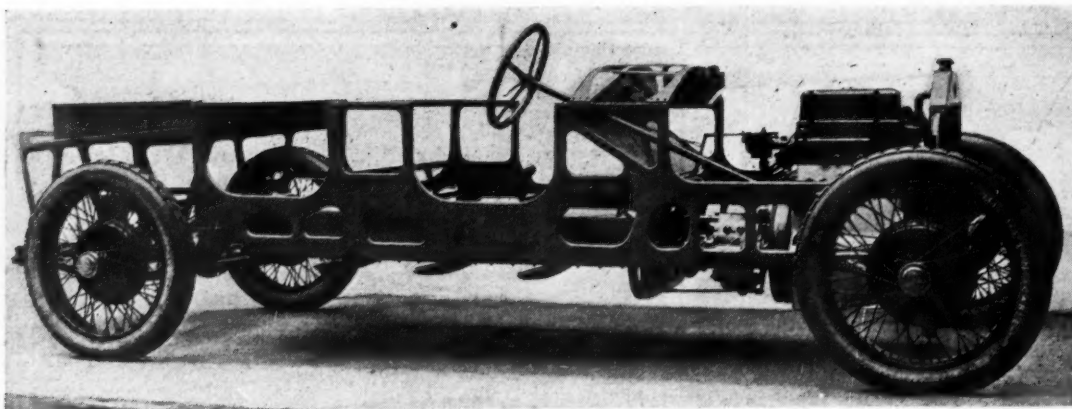
Benjamin Overhead Valve Gear

Another unusual type of overhead valve gear is that used on the Benjamin cars. A vertical shaft going through the cylinder block between the second and third cylinders drives by means of bevel gearing a horizontal shaft carried in two bearings on the top of the cylinder head. This lay shaft drives the camshaft through spur gears, and the valves are opened by means of single arm rockers between the cams and the valve stems. On this engine the water pump is mounted on the front end of the detachable cylinder head and is driven by an intermediate pinion from the camshaft. There is no general type of drive for overhead camshafts. Delaunay-Belleville uses straight bevel; Excelsior has spiral bevel gears; Bignan uses helical gears, and on the small Majola there is a silent chain drive from crankshaft to camshaft.

Three point and four point attachment of engine to frame members are about equally represented. Fiat, on



1—Omega 122 cu. in. light six, showing central portion of chassis. 2—Omega light six showing rear view of forward part of chassis. 3—Hallot type servo brake on Chenard-Walcker. 4—Servo brake mechanism used on the Renault alpine bus. 5—Fiat six-cylinder car, showing cantilever rear suspension. 6—Bignan hydraulic and coil front suspension. 7—Salmson rear suspension consisting of two independent quarter elliptic springs. 8—Bignan positive overhead valve gear. 9—Bignan overhead valve gear with positive opening and closing. The two cams shown operate four valves



The frameless Lancia. Body is designed to fulfill the functions of the frame members. A combination of hydraulic and coil spring serves for front suspension

the new six, has made use of the engine base chamber to stiffen the frame and has eliminated the front cross member. The radiator is mounted directly on the engine base chamber, quite independent of the frame. On the new Omega Six an elastic three point attachment of a rather unusual type is to be found. To left and right of the rear end of the engine are a couple of big diameter steel tubes bolted to the crankcase by flanges. These tubes are received in rubber lined trunnions in the frame members. At the front end of the group there is another trunnion attachment to a very heavy cross frame member.

Unit construction of engine and gear box is now found on 85 per cent of Continental cars. The only maker of importance who adheres to separate construction of these units for all his cars is Renault. Plate clutches are now the most numerous, followed by multiple discs, with cone clutches a poor third. Ferodo and similar linings are being used extensively in place of leather on cone clutches.

While there is an increased use of fabric universal joints, generally combined with open propeller shaft and Hotchkiss drive, on the majority of Continental cars the drive and torque are not transmitted through the springs. An enclosed propeller shaft with a sphere on its forward end received in a corresponding housing on the rear face of the gearbox is the most generally adopted practice. An interesting modification of this system is found on the new Omega, where the ball head on the propeller shaft housing is received in a heavy tubular cross member with diagonal stays to the frame members, just back of the gearbox. This design permits the use of a brake drum back of the gear box.

Four Wheel Brakes Common

Last year four wheel brakes on big cars were a feature of the Paris show. This year the outstanding feature is the use of brakes on all wheels for cars of all sizes, and by makers with a reputation for conservatism. Notable examples are Delauney-Belleville, Renault, Panhard, Unic, and De Dion-Bouton. Perrot type brakes are the most extensively used, these having been adopted by 35 Continental makers. Other well known systems are the Adex, designed by the chief engineer of the Belgian Excelsior Co., and the Isotta-Fraschini type found on this make of machine and on a number of Italian makes. In addition to these there are probably a score of individual systems, comprising a few of the hydraulic type.

Generally speaking, the tendency for the leading makers is to adopt a well-tried system rather than to experiment with their own designs. This was done by De Dion-Bouton who, after carrying out some experiments

according to their own designs, took up the Perrot system and got satisfactory results on the first application. Other similar cases are Renault and Peugeot, both of which firms experimented with their own designs and finally adopted the Perrot.

The Voisin company first used front wheel brakes on competition cars and purchased all the parts from another firm which was working under a Perrot license. This company has now fitted all its cars, including a small model with 10 hp. sleeve valve engine, with the Perrot type front brakes built in its own shops.

Variation in Brake Details

This tendency to build under license brings about a general uniformity in design, but leaves room for plenty of original detail work. There is a neat arrangement on the new De Dion-Boutons. Instead of direct connection by one rod or cable from the lever on the front brake camshaft to a second lever mounted on a shaft carried in or on the gearbox, which arrangement gives a very long rod requiring a central support, De Dion-Bouton connects from the first lever to a second one on a shaft coming through the frame a short distance back of the radiator. Ball and socket connections are used for this short connecting rod. The cross shaft under the hood carries a couple of levers with equalizing gear, and single rod connection from this to the lever on the main shaft. For the rear brakes there is a single rod carried directly under the propeller shaft housing. The rear wheel brake camshafts are extended right across the axle and have their levers close up to the differential housing. In this connection should be mentioned the Lancia practice of mounting the brake camshaft on ball bearings to avoid the necessity of lubrication, for this is one of the most neglected parts of a car.

Fiat has applied front wheel brakes for the first time to a stock car on a new six-cylinder model known as Type 519. The design is of the Isotta-Fraschini type, with the brake camshafts carried in the axle, the cam being in the lowest part of the brake drum. The influence of racing is seen in this design, for the axle is half moon shape between the spring seats and of circular section from the spring to the steering head. On the racing cars the axle was circular section throughout, bored out for lightness. With this design an axle is secured capable of resisting the torsional stresses of front brakes, and the concave portion of the axle provides a housing for the brake camshafts.

Where front wheel brakes are used they are invariably of the internal expanding type and are nearly always applied by foot simultaneously with the brakes on the rear wheels. In most cases the transmission brake is aban-

done, or if retained it becomes an emergency brake, hand operated, used to hold the car in a standing position. To comply with the law which requires two independent sets of brakes there is a separate control by hand for the rear wheel brakes only. There is a tendency, however, to remove all brakes from the rear wheels and to fit transmission and front wheel brakes operated simultaneously by pedal. This has been tried out on several competition cars during the past season and is now fitted as standard by Chenard-Walcker and Bignan. The Roland-Pilain Co. has also used this system for competition cars. On the Chenard-Walcker the engine and gearbox are a unit construction. The spherical ended propeller shaft housing is carried in a heavy cross frame member, and immediately in front of this is the brake drum and Hallot servo mechanism. Connection between the drum and the gearbox is made by an open shaft with a couple of fabric universals.

New Types of Servo Brake Mechanism

In addition to the Hispano-Suiza, mounting the first servo brake on a standard car, there are now several other devices of this nature. On the new six-cylinder Fiat the servo-mechanism is of the hydraulic type housed in the base of the gearbox and making use of the gearbox lubricant. Should the gears be left dry, the brakes are applied directly through the levers and rods. Renault has applied a friction type servo-mechanism to a pneumatic tired bus designed for service in the French Alps.

On the 12 hp. De Dion-Bouton a simple type of servo-mechanism originally applied to Farman cars is made use of. The two internal brake shoes are forked one to the other and form a continuous band. The brake cam comes in contact with the extremity of one shoe only, the other end being a fixed point. The first shoe, when brought in contact with the revolving drum, is carried forward by it and pushes the second shoe into contact. A somewhat similar system, but with a wedge instead of a cam, is made use of on the new model Sizaire-Berwick.

While a lot of work has been done on suspension, there is no dominant line of development. The most important convert to the cantilever is Renault, who uses this type of spring for all his models above 12 hp. and mounts the pair diagonally, the forward ends being brought as close as possible to the center line of the chassis. On the smaller and cheaper models Renault uses a transverse spring of the Ford type. Quarter elliptic springs are confined to very small cars, and even in this class there is a tendency to use half elliptic at the front.

Fiat Cantilever Suspension

Fiat has brought out a new type of cantilever originally seen on an experimental Lancia, but which was never marketed. The long cantilever is mounted directly under the frame member and is shackled below the axle housing. The second leaf of this spring is extended rearwards through the branches of the shackle to the rear end of the frame, to which it is shackled. It is claimed that this extension leaf eliminates all tendency for the rear end of the car to roll at high speeds, which is one of the main objections raised on the Continent against the cantilever.

Last year Unic produced a double cantilever, one being above and the other below the axle. On a new 10 hp. model use is made of a full cantilever secured above the axle and of a three-leaf quarter-elliptic, the leaves of which are of uniform thickness, attached below the axle housing. On a new light weight 10 hp. Salmson quarter elliptic rear springs are used, with the ends of the two main leaves secured between a couple of semi-circular

blocks on the front of the axle housing. From the rear of the axle to the extremity of the frame member a flat four-leaf quarter elliptic is used, its rear extremity being rigidly bolted to the frame, and the front end received, as in the case of the main spring, between semi-circular rollers.

De Ram Hydraulic and Coil Spring

Bignan has adopted the De Ram system, which is a combination of both the hydraulic and coil springs, and is used both front and rear. Another suspension of the same general class is to be found on the original frameless car produced by the Lancia company. Oilless bushings for shackle bolts have not caught on. The Alemite system of lubrication, which has been incorporated with another American system and is marketed in France under the name Tecalemite, is found on a very large majority of cars in the Grand Palais. On a new high-grade 22 hp. car Berliet has screw-down greasers of nearly 2 in. diameter, but which are not at all clumsy, for they are symmetrical with the spring eye or with the shackle, and at first sight appear to be an extension of these parts.

There is a remarkable increase in the number of pressed steel welded rear axle housings, this type being found on 65 to 70 per cent of Continental cars at the present time. The only change with regard to final drive is a still further increase in the use of spiral bevel gears.

Simplification of Design Neglected

While there has been a decided improvement in the general quality of automobiles as represented by the Paris Salon, there has been comparatively little attempt to reduce initial cost by simplified design from a production standpoint. Lorraine-Dietrich has given this matter attention in a light six and in a four of the same bore and stroke which now supplements it, and big production has been considered in laying out the Citroen and the Berliet. Generally, however, Continental engineers have been much more concerned in seeking mechanical efficiency and low operating costs than in reducing production costs. Fuel economy has been sought in the design of small, high efficiency overhead valve engines running at comparatively high speeds. An important number of the engines put on the market this year reach the peak of their power at 2700 to 3000 r.p.m.

The most important development in the class of car with an engine of less than 67 cu. in. is the appearance of the new Renault. This has four 2.28 x 3.54 in. cylinders and a wheelbase of 96 in. It is produced both as a two and a three-seater, and follows the same general lines of construction as the big production 12 hp. Renault. The only change of any importance is the adoption of a detachable in place of a fixed cylinder head. Citroen, who makes a similar car, claims that his production of this small model is 75 a day, and that his total output is 125 cars a day.

While the Paris show was in progress Citroen made demonstrations of his rubber creeper band machine for passenger service in the city. With the normal 10 hp. engine as used on his stock car, the rubber creeper band machines carried eight passengers, and were capable of maintaining the same average speed under city traffic conditions as pneumatic tired passenger cars.

REPORTS received by the Automotive Division of the Department of Commerce from Assistant Trade Commissioner William H. Park, at London, shows that the British motor production continues on a restricted scale. The foreign trade of the British manufacturers is falling off and the importation of American cars continues to increase.

New 20 H.P. Rolls Royce Has Overhead Valves and Unit Powerplant

Design differs widely from old 40-50 h.p. chassis. New model has block cylinders with detachable head, battery ignition, cooling control, and semi-elliptic springs. Marks departure from one-model policy adhered to for past fifteen years.

By M. W. Bourdon

THE introduction of a supplementary and smaller model by the Rolls Royce Company in England is the outstanding item of interest concerning British manufacturers' plans for 1923. It represents a departure from a one-model policy maintained for fifteen years past, and has obviously been brought about by the increased competition in the luxury car field coupled with the limited demand. The new model will not be manufactured in the American plant.

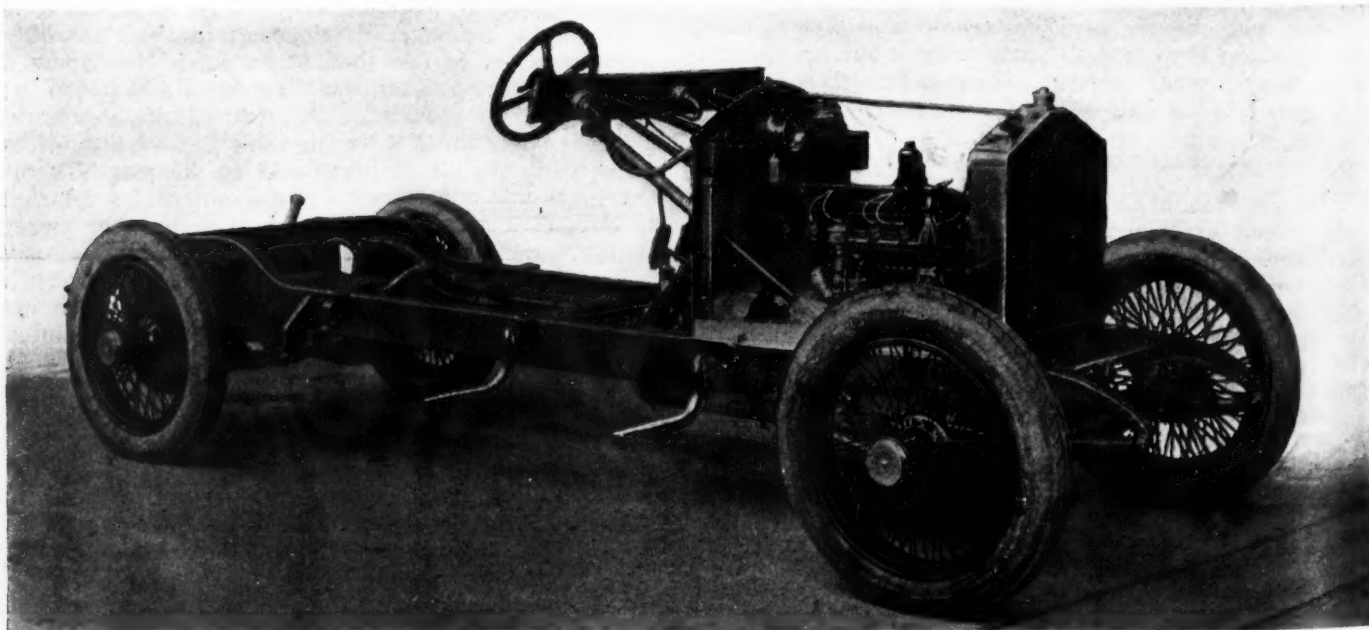
The new chassis has not, however, been rushed in the designing or experimental departments, for it has been an open secret for more than twelve months that several smaller Rolls Royce chassis were under test. The only surprise accompanying the introduction of this new model relates to the dimensions of the six-cylinder engine, for it was generally believed that these would be $3\frac{1}{2} \times 4\frac{1}{2}$ in., whereas the bore and stroke of the type selected for production are $3 \times 4\frac{1}{2}$, giving a piston displacement of but 190 cu. in., with a speed range up to 3000 r.p.m.

The first outstanding difference between the new engine and the existing model is the use of overhead valves; with

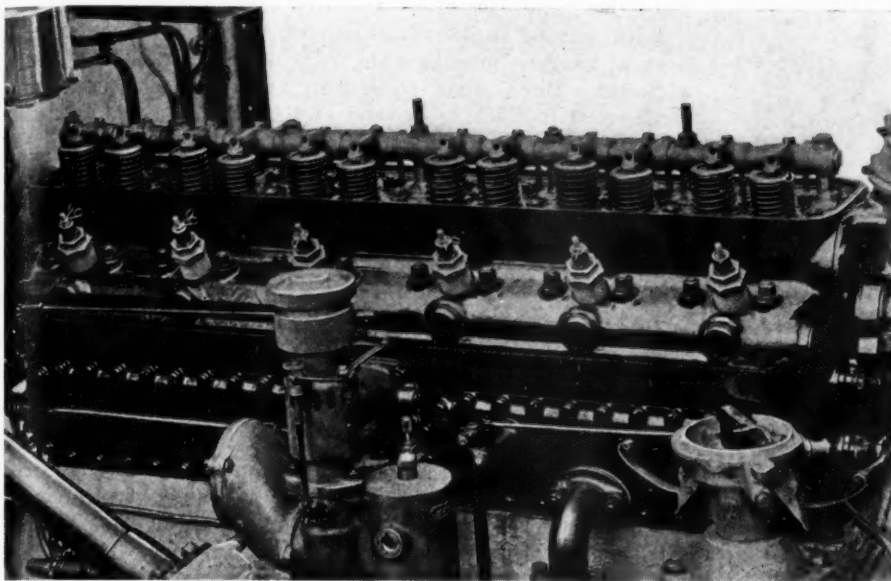
heads of high-chrome steel. These have push-rod operation and there is nothing remarkable in the rocker design or mounting excepting that the valve clearance adjustment is at the top end of the cam followers, the push-rods being solid and located in the cupped extremities of the followers and rockers. The camshaft drive from skew gearing is transmitted through a series of sixteen helical compression springs forming buffers between the gear wheel and the shaft, with an opposed series of springs to dampen out the reaction of the main springs.

The use of a single block casting for the cylinders is another new feature for Rolls Royce, as is also a detachable one-piece cylinder head. The head is held to the block by 36 studs and nuts, the majority of these studs passing down through the block casting into the top of the aluminum crankcase, thus holding the three units together. Both head and cylinder block are of cast iron.

The crankcase is in two parts, the lower half forming the oil pump only, the upper carrying the crankshaft in seven journal bearings. The crankshaft is machined all over, and both pins and journals are bored for weight re-



Three-quarter right side view of new Rolls Royce chassis. Radiator shutters are standard though not in position in this view



Right side of engine, showing carbureter, distributor with top half removed, overhead valves, spark plug location and water jacket plates on side of cylinder block

duction and to form oil passages. The connecting rods are of H-section, while the aluminum pistons are of the straight-side split-skirt type fitted with three compression rings in the crown, one used as a scraper and an expansion ring within the skirt.

Pressure lubrication is employed throughout. The gear type pump delivers oil to the three main journals of the crankshaft (center and each end) and thence through the hollow shaft to the other four subsidiary journals, the big-ends and the wrist pins. A lead, partly exterior and partly formed with the cylinder and head castings, runs to the front end of the hollow rocker shaft, oil under reduced pressure thus reaching the pivot bearings and, through the holes in the rockers, the sockets in the latter for the push-rods. The overhead valve gear is located within a tray integral with the top of the head casting and surplus oil drains back through the push-rod passages to the crank case. The detachable top cover of this valve tray carries the coil of the battery ignition system, so that to expose the rockers necessitates bringing away the cover with the high tension wires and the top half of the distributor.

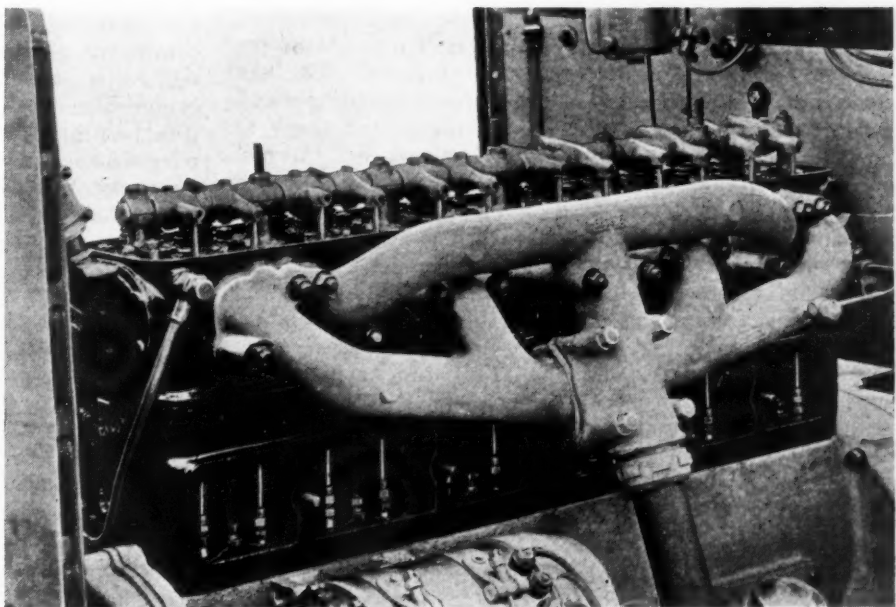
Although the battery system of ignition is at present standard, provision is made, by a facing on the crankcase, for fitting a magneto bracket with a tandem drive from the rear end of the generator, the latter being on the left of the crankcase with a direct drive from the distribution gearing. The starting motor is also on the left, low down and piloted into the flywheel casing for a Bendix drive. The switch is operated by pedal and has a dash-pot control.

The whole of the electric equipment except the battery is of Rolls Royce design and manufacture, the wiring of the lamps being on the single wire system with a 12-volt circuit. A point to be noted in regard to the ignition is the semi-automatic timing advance. The lever over the

wheel controls only the first 35 deg. of advance and from that point a governor in the distributor casing takes care of the remaining 35 deg.

The carburetor also is exclusive to Rolls Royce as is that on the large model. It has two jets with dash control and an automatic air valve with a dashpot. The primary air supply is taken directly from the crankcase, thus eliminating a breather pipe and, it is claimed, preventing the smell of hot oil from reaching the passengers. For starting from cold there is what is to all intents a separate carburetor brought into or taken out of use by means of a control on the instrument board.

The carburetor is on the right of the engine, its outlet pipe leading to a transverse passage in the cylinder block; on the left of the latter the induction and exhaust manifolds are separately cast but the center of the induction branch is in firm contact

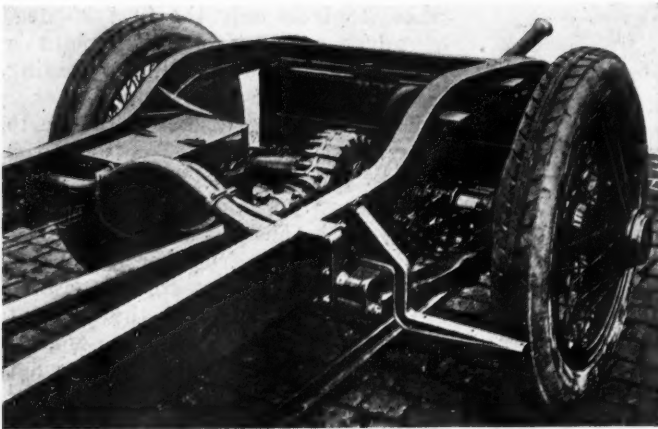


Left side of engine with valve cover and plates enclosing lower end of push rods removed. Note that the manifolds are locked together in such a way as to provide hot spot

with the centre of the exhaust, the latter being flanged out at this point and the two united by a wide saddle. It is not intended that the two manifolds should be separated when they have been once assembled. The fresh mixture issuing from the transverse passage comes into contact with a hot-spot where it must take a right angle path before being carried to the inlet ports by way of the four-branched manifold. The exhaust manifold is a three-branch unit with a central down-take to the exhaust pipe and muffler.

A feature of the large Rolls Royce has always been the provision of a throttle governor, the lever over the steering wheel controlling this unit, while the accelerator pedal acts directly upon the throttle. But in the 20-hp. model the governor is omitted, the lever and pedal both acting directly.

Vacuum fuel feed has been adopted, the vacuum tank on the inner face of the dashboard being of much larger



Rear end of new Rolls-Royce chassis showing the semi-elliptic springs

capacity than the normal, so providing a half gallon or so of fuel in reserve. The fuel tank is carried at the rear end of the chassis, is of 14 (Imperial) gallon capacity and has a dial gage alongside the filling spout.

Water circulation is by pump located on the right of the engine and driven from the distribution gearing through a flexible disk coupling. The pump delivers through a short elbow directly into the bottom of the cylinder jacket, while the only outlet to the radiator is at the front end of the head. The radiator is of the cellular pattern. The belt driven fan is eccentrically mounted for belt adjustment. Radiator shutters are standard, the control of these at present being by hand from the driving seat, but thermostatic control may be fitted later on. From the rear end of the cylinder head jacket a small pipe leads to a dial thermometer on the instrument board.

The suspension of the power unit is on the three-point system, but distinctive in detail. Through the rear end of the crankcase casting passes a tubular cross member, with lugs at each end having a horizontal bearing on short frame brackets. At the front the crankcase is clipped at two points on each side to a U-shaped tubular member which is supported at its front extremity by a trunnion bearing on the cross member of the frame located below the radiator. The enclosed clutch pit and three-speed gearset overhang toward the rear without direct support from the frame.

Single Dry Plate Clutch

Entirely enclosed and having merely a circular inspection hole cover in its bell-housing, the clutch is of the single dry plate type, an innovation for Rolls Royce, who have hitherto employed the cone type. There are eight non-adjustable springs and four pivotted operating levers; a plain pilot bearing with provision for hand oiling is used.

The three-speed gearset is very compact, despite the fact that the countershaft and the driven shaft have three bearings each, the third bearing of the latter shaft almost entirely relieving the pilot bearing of its usual function. The control lever is central and the brake lever, on the left side has an inverted ratchet quadrant. The constant mesh gears are of the helical type. The bearings are of the ball type, excepting the plain pilot, and a speedometer drive is provided. An open tubular 2½-in. diam. propeller shaft, has enclosed cross pin universals. The final drive is by spiral bevel gears (ratio 4.6 to 1 or 4.4 to 1) the pinion having an outboard bearing besides two on its main shaft. The differential is of the bevel type. The housing of the full floating axle consists of two aluminum center castings bolted together at a joint in a vertical plane, with flanged and tapered steel tubular extensions and a truss

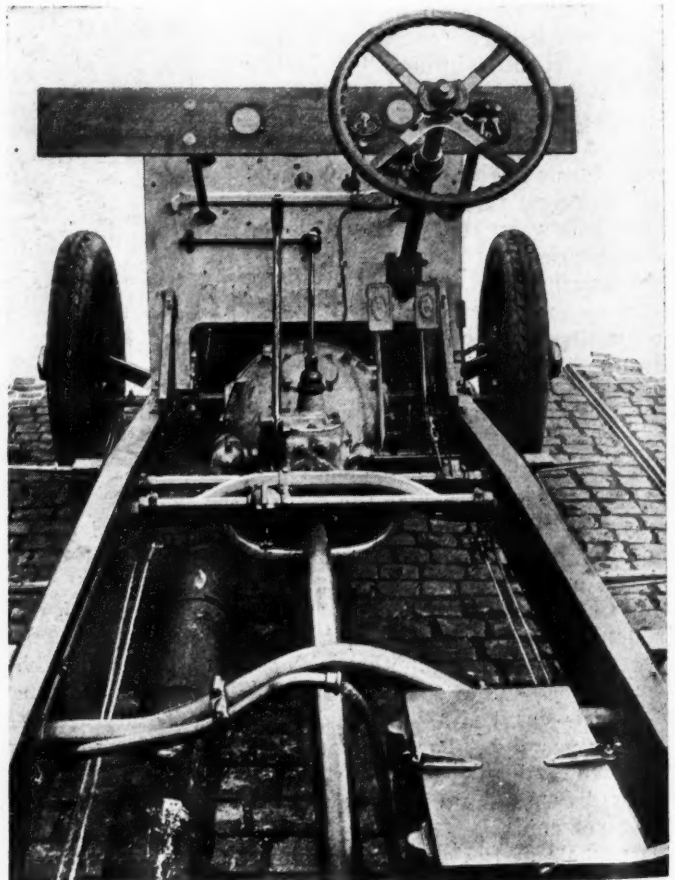
rod below. Ball bearings are used throughout.

Both sets of brake shoes expand within the rear wheel drums; they lie side by side, have fabric facings and are enclosed. Bevel gear equalizers are fitted on the cross shafts just behind the gearset and from the levers on each of these shafts steel cables take the place of rods. The brake camshafts are behind the axle at the same height from the ground, and a triangular double-plate bracket is therefore welded to the axle casing at each side to carry, at the front, a pair of intermediary levers, to which the cables are attached at the top with coupling rods lower down to act upon the camshaft levers.

Semi-elliptic springs with solid ends are used at front and rear. They are encased in leather gaiters and fitted with frictional dampers, the rear set of the latter having a two-stage effect increasing with spring deflection. The rear springs are underslung, take both torque and drive and are 54 in. in length. Both back and front springs are attached to the axle by means of bolts and a steel sheath which engages with keys formed on the axle, thus transmitting end shocks from the axle to the upper leaf without stressing or tending to shear the central leaf-locating bolt.

Worm and Nut Steering Gear

The steering equipment resembles that of the 40-50 hp. model, being of the worm and nut pattern with ball bearings and means for adjustment of the column. Spherical joints are used for the drag-link and cross-coupling rod, while the swivel axle pivots are inclined to bring their center lines to the ground contact of the tires. An H-section forging forms the front axle. Dunlop triple-spoked wire wheels with straight side rims for 32 x 4½ in. tires are used, for although rims for clincher edge tires are optional, the straight-side type is recommended.



Center of chassis, showing the two tubular cranked cross-members, also brake cross shafts with bevel gear equalizers, the clutch casing and gearset

There is nothing elaborate about the dash and instrument boards. The former is a plain aluminum plate with tubular steel brackets bolted to it to carry the instrument board. The latter is of wood or aluminum, as desired, and carries the usual instruments and controls plus the special ones already mentioned. Chassis lubrication throughout is by nipples and high pressure grease gun.

The frame side members are 6 in. deep between the inner ends of the springs, and 2½ in. wide. They have a kick-up over the rear axle and are slightly inset at the front. There are only two channel section cross members, the remainder—five in number—being tubular. One of the latter is located in front of the radiator line to stiffen the front horns and carry the front bearing of the starting crank.

The construction of the chassis parts is of the same grade which has characterized Rolls Royce cars in the

past. The engine as a whole is obviously an expensive job, but in most other parts of the chassis there is nothing very costly about the design, though expense is not spared to provide an excellent finish. The price asked for the chassis (£1100) is not remarkable as compared to the larger model at £1850, though it is admittedly a high price when the engine dimensions and bare specifications alone are considered.

This model is intended for open and closed bodies seating up to six people. The chassis weight is 2020 lb. Some of the important dimensions are as follows:

Wheelbase	129 in.
Track	54 in.
Length of frame behind dash	99 in.
Length of frame to center of back axle.....	90 in.
Length overall	178 in.
Minimum ground clearance	11 in.

New Bus and Speed Truck Axle

A 1-TON speed truck and motor bus axle has been brought out by the Flint Motor Axle Co. It is of the spiral bevel gear type and the pinion shaft is supported by ball bearings on both sides of the pinion, which provides a more rigid support and tends to insure true pitch line contact.

The center housing is made of malleable iron, cast in one piece. The hole for the axle tubes is bored to the same diameter as that required for the bearings on the sides of the differential. This tends toward economy in operation, and it is claimed that the malleable casting permits of lower priced manufacture than the pressed steel housing construction or the usual method of building up axle housings.

On the two main shafts there are six roller bearings, all of the same size, and the shaft is splined on both ends, the hub having a pressed fit and the side gear and differential a sliding fit on the splines. The main tubes are made of 30-40 point carbon steel and of large diameter. The tube tapers down to 3 in. diameter at the spring support.

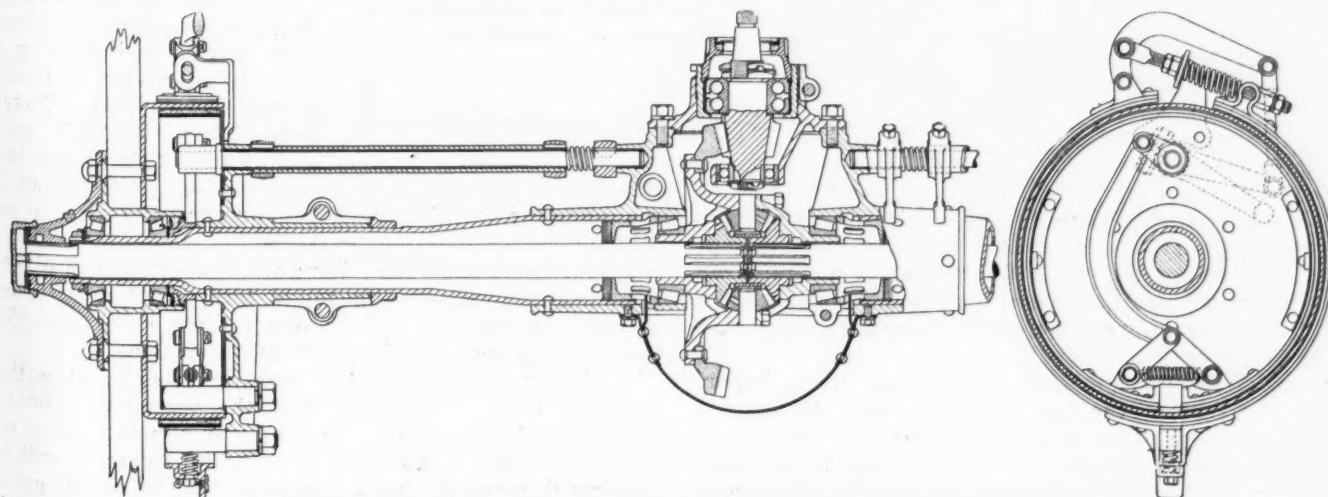
The axle main shafts are 1½ in. in diameter and of S. A. E. No. 3135 steel. This axle is designed to carry a maximum of 4000 lb. live and dead load. The corresponding front axle has a load carrying capacity of 1400 or 2200 lb. The loads mentioned are those for which the axles are guaranteed, and in the design factors of safety

of from 6 to 9 are claimed to have been incorporated. The axle, which is of the floating type, can be furnished with gear ratios of 4.9, 4.4, 5.2 and 5.5 to 1. It can be furnished with torque arm or as a Hotchkiss drive type.

A POTENTIAL fertile market for automobile export business in Indo-China is reported to the automotive division of the Department of Commerce by the Department's Trade Commissioner in that country. He says:

"The country, which is flat and covered with an excellent system of 19,000 kilometers of macadamized and graded roads, assures a brilliant future for the automobile. Already motor, passenger and freight services are spreading and the lack of railroad transportation is favorable to the establishment of new lines."

Several factors, however, are handicaps under which the American exporter must compete, chiefly against the French. "First of these is the question of credit, local agents not being required by the European manufacturers to pay for his shipment until the arrival at destination; second, gasoline retails at about 70 cents gold per gallon, and the American cars consume from 50 to 100 per cent more than the French cars in Indo-China; and third, slow delivery, compared with European delivery," the report states.



Sectional views of Flint bus and speed truck axle, of the spiral bevel gear type. Center housing is of malleable iron cast in one piece

Points to Remember in Designing Oil and Fuel Filters

Ready means for cleaning out sediment of great importance. Upward flow through horizontal screen at slow rate tends to prevent clogging and allows foreign matter to settle. Sediment bowl should be large and of such shape as not to be broken by the freezing of water which collects in it.

By J. B. Ferguson

AN ideal passenger car should run for 50,000 to 100,000 miles not only without stopping except at the will of the operator, but also without requiring overhauling or any mechanical attention beyond such items as grinding the valves, removing carbon, adjusting and relining brakes. It is easy enough to attain this perfection as far as the strictly mechanical units are concerned, but there are some weak spots still to be improved. Fuel and oil supplies must be fully maintained without any interruption and ignition must not fail.

The fuel and oil systems present a common problem in that the reliability of both depends upon the removal of foreign matter from the liquids used in them. Arrangements for drawing off this foreign matter before the sediment chambers fill up should not be left to chance.

These statements are not nearly so obvious as they sound. In numerous engines the screening arrangements used for separating out sediment are not adequate and in practically all engines the cleaning of the strainer and the emptying of the sediment chamber are totally neglected until it is time for the bearings to be taken up and even then it may not be done. Often foreign matter is not removed and the screens are not cleaned until lubrication fails. This frequently happens before it is necessary to take up the bearings.

The need for good filtration is perhaps more important in the case of the fuel system. Good atomization and economy are often dependent upon the use of fine jets, but minimum jet size is limited in part by the fact that there is often dirt in the gasoline. This dirt consists of scale from the inside of the tank, lint and rubber from the inside of the filler hose, dust from the road

which enters the tank when the cap is off or being replaced. On most cars it is only a question of time until some part of the fuel system clogs up and the engine balks.

Many cars are fitted with no less than three and sometimes four strainers between the main tank and the carbureter. There is often a screen in the main tank, one in the vacuum tank and a third in the bottom of the carbureter, while if a filter is installed in the feed line its screen makes a fourth. These are often so small and inaccessible as to be worse than useless.

In studying this problem various types of filters were tried. It was not hard to find a filter that would work well for 5000 or 10,000 miles, but no filter was discovered which was invariably good for the life of the car. A filter which fails before the car is worn out is sometimes little better, and perhaps worse, than no filter. The object in installing a filter is to prevent stoppage of the flow of fuel. Therefore if the filter fills with sediment and thus clogs the

line it is as bad as no filter. Likewise if the screen is too coarse or the filter material corrodes or rots, it is no filter.

It has been found that there are at least fifteen different conditions which a gasoline filter must meet to be entirely satisfactory. With one or two exceptions the same points apply to the lubrication system.

1—Above all, some means must be used to draw the sediment off so frequently that the sediment chamber will never become full. One of the simplest ways of doing this with a gasoline filter is to locate it within easy reach when the hood is open so that whenever gasoline is wanted for washing or other purpose it is logical for the driver to open the cock on the sediment chamber.

TOO little attention has been given in the past to the fundamentals which underlie the logical design of filtering systems. These fundamentals are here clearly stated and illustrations of their practical application are given.

The need for filtering fuel and oil is quite generally recognized, but the methods followed are often crude and correspondingly ineffective. Frequently there is inadequate means for collecting sediment, while provision for removing the foreign matter which accumulates in the screen and the settling chamber is usually lacking entirely or is so inaccessible as to be seldom given attention.

The remedy for this condition suggested in this article is worthy of careful consideration.

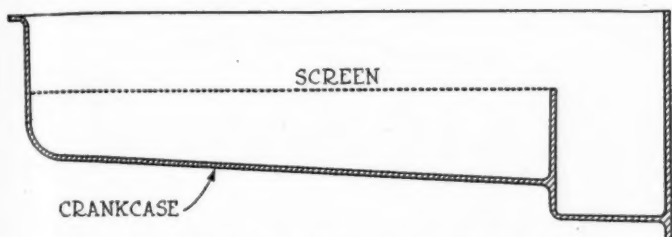


Fig. 1—Diagram of one common type of oil filter which becomes easily clogged with foreign matter and is relatively inaccessible for cleaning.

Inasmuch as there are some drivers who never use gasoline for any purpose, instructions for draining the filter should be placed on it in large, easily read letters. The draining of sediment from the engine base is frequently of equal importance.

Foreign matter, which is lighter than the fuel, can only be removed from the vicinity of the screen by draining, and matter which is heavier than the fuel should be drawn off before there is too large an accumulation. The success of the fuel filter depends entirely upon its being in such an accessible position that there is some inducement to drain it.

2—Straining should be in an upward direction. This is fundamental if the straining material is to be self-cleaning, and the filter must be considered of doubtful value unless it is self-cleaning. When straining is in an upward direction dirt which lodges on the screen is shaken loose and falls by gravity. On the other hand, if straining is downward, gravity and vibration combine to wedge the foreign matter into the mesh openings. Theoretically a vertical screen is neither self-cleaning nor self-clogging, but actually dirt lodges in it almost as rapidly as the down flow screen.

3—Flow through the screen must not be too rapid, otherwise particles of foreign matter will become wedged in the screen openings whether the flow is upward or not.

In considering gasoline strainers, many are of the impression that a large screen area is not required if the strainer is fitted on the supply pipe to the vacuum tank, for the reason that the return through the strainer of a small quantity of fuel each time that the vacuum tank releases helps to clean it. While this is true, it is largely counteracted by the velocity through the screen being so much higher when the vacuum tank is drawing fuel from the main tank. For this reason a straining screen in the position employed in most vacuum tanks is only a source of annoyance unless the mesh is so coarse that it is of no value as a strainer, which is frequently the case.

Provision for Collecting Sediment

4—There must be a space for settling of foreign matter below the straining surface.

5—The foreign matter must be brought to one point for draining, otherwise it cannot be removed unless the apparatus is taken apart for cleaning.

6—It should not be necessary to dismantle the mechanism in order to clean it thoroughly. If the straining area is too small the apparatus must be taken apart for cleaning. Frequently small particles of foreign matter become firmly imbedded in the screen so that in reassembly there is the chance that some of it will be found on the outlet side. Furthermore, anything that takes time and must be done periodically is usually forgotten and there is always the possibility of leakage when the joints are reassembled.

7—The filter should have no open joints of any sort.

Experience proves that joints which open by unscrewing, etc., will leak in the course of time.

8—There should be only one straining screen. Two or more layers are satisfactory as far as straining is concerned, but when this construction is employed one of the two will not be self-cleaning.

9—All materials used in the filter should be able to stand up indefinitely without corroding. This requirement applies particularly to the straining screen and more especially when the car is out of service for extended periods. It is when the car is laid up that many otherwise excellent materials rust out.

10—The straining material must be metallic. Other materials have been found quite unsatisfactory over long periods when subjected to all the conditions necessary.

11—The shape of the sediment bowl must be such that water freezing in it will not cause trouble either by clogging the system or cracking the bowl. This consideration, of course, applies just as much to the filter in the crankcase as it does to the one for the fuel.

Water in the fuel line is a well known source of trouble and the object should be to bring it to the filter rather than to keep it in the main tank where it will accumulate. Consequently there should not be any U-bends or loops in the line since water sometimes freezes at the lower side of these and causes a most perplexing fuel stoppage.

12—All required instructions for successful operation of the filter should be clearly printed on it. This requirement is a good one to stipulate in the design of any piece of machinery.

13—The device should be light and compact.

14—Its cost of manufacture should be low.

15—Its cost of installation should be low.

In applying these principles to the design of an oil filter it was found that at least 95 per cent of engine oil filter screens have too small an area, while the majority have no means whatever for removing the foreign matter refused by the strainer.

The writer knows of a car with an 18 hp. Knight engine which ran for years without a moment's trouble, and then one day it froze, due to lack of oil. When the engine was taken down it was found that the oil sediment in the crankcase had become so congealed to a depth of about 2 in. that all oil passages had become clogged. Had the engine been less carefully constructed, its bearings would have required attention more frequently, and the accident would never have occurred.

Strainers with insufficient areas, or ones through which the liquid passes in the wrong direction, especially, should

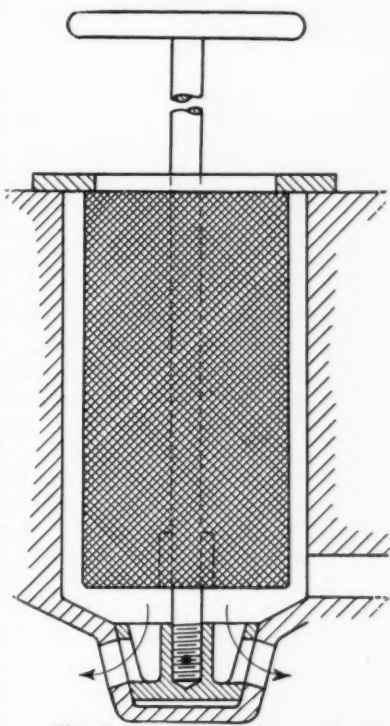


Fig. 2—Diagram of a vertical cylindrical filter, with sediment trap and drain valve below.

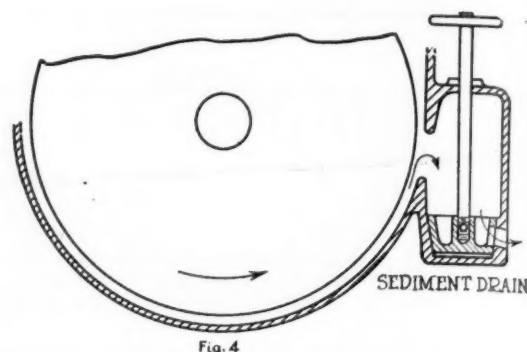
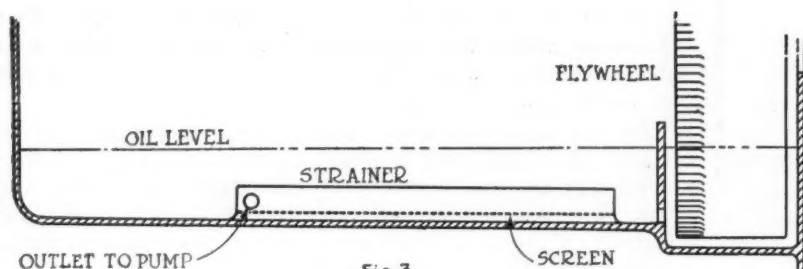


Fig. 3—Diagram of a self-cleaning oil filter. The oil rises through the wire screen which closes the bottom of the inverted box. Sediment runs through the small hole into the flywheel compartment. Fig. 4—Section through flywheel compartment of the system shown in Fig. 3. The oil (and sediment) is thrown by the flywheel into the settling chamber at the right and overflows back to the sump. The sediment is easily drained off by simply turning the valve handle which can be easily reached without getting under the car

be made easy of access for cleaning. Fig. 1 shows a popular type of strainer, though one not to be recommended since the grit from the cylinders falls upon it, making frequent cleansing necessary. Ordinarily this involves the removal of the bottom half of the crankcase, although in the case of the Vauxhall car, the screen can be drawn out from the front of the engine without detaching the bottom half.

The circular, or tubular type of strainer has become very popular in recent years when placed in a vertical position, it has the advantage of being easily removed for cleaning. If it has a suitable drain valve at the bottom, for drawing off sediment and dirty oil refused by the strainer, it works reasonably well provided its area is sufficient. Fig. 2 shows such a strainer.

Where to Strain Oil

The question as to whether the straining should be done before the oil reaches the pump, or afterward, is a point of contention with many designers. The writer holds that this point can be settled by one argument which a majority of engineers have overlooked. That is—the strainer should be located so that the velocity of liquid through it will be lowest. If the strainer is placed on the inlet side, all oil passing through the pump must go through the strainer, whereas if the strainer is placed on the pressure side, this need not be so, providing the by-pass is placed between the pump and the strainer. In this case as much as two-thirds of the oil pumped may be short circuited back to the pump intake, so that only one-third passes through the strainer. Consequently, other things being equal, only one-third the strainer gauze is required when the strainer is placed on the discharge side.

Filters should be self-cleaning, not only because they will be neglected by the bulk of automobile owners, but also because cleansing a screen with a brush is likely to force the grit further into the mesh and, in addition, grit frequently is forced through on to the wrong side. Cleaning a filter, by the way, is a job not relished by most automobile users.

Some filters have been designed with a three-way valve so that the strainer can be cleansed by allowing the oil to be forced through the pump in a direction counter to normal for a few moments. Such an arrangement, however, is too complicated and cannot be looked upon with favor as long as there are many simpler ways of handling the problem.

Extensive experience with the problem of oil filtration, leads the writer to favor the arrangement illustrated in Figs. 3 and 4. Equally good results can be obtained by placing the different components in other posi-

tions, according to the requirements of the engine design, but the fundamental points are correct. The straining component is made up from sheet metal formed into an inverted rectangular pan, the open or under side of which is covered with a wire gauze securely soldered in position, so that oil passing through it must do so in an upward direction. The pump draws its supply from the interior of this component and the oil which passes from the relief valve also flows back into this chamber, instead of going back into the sump. This is most important, because the only oil which goes through the strainer is that which actually is delivered to the bearings of the engine, thus the velocity through the strainer is kept at a minimum. The grit refused by the strainer accumulates in the bottom of the crank case and finds its way through the small opening to the flywheel compartment, where the flywheel throws it into the grit trap shown in Fig. 4. The opening between the sump and the flywheel compartment must be small so that the flywheel will not become unduly flooded, but will carry the oil away faster than it can flow through the hole. There is, of course, an overflow from the grit trap back to the sump. The raising of the sediment by the flywheel to the grit trap allows any specific quantity of oil to be drawn off and gives plenty of room for a suitable discharge valve with ample ground clearance. A mushroom valve is not satisfactory, although it requires less space, because grit collects on its seat and prevents it from closing.

An oil filtering system along the lines described was designed for a special purpose during the war as a result of a great number of experiments and proved so satisfactory that, after many thousands of miles in service, the straining material was practically as clean as when installed. It is the opinion of the writer that straining material thus arranged will never require cleaning by hand.

German Railcar Specifications

THROUGH a compositor's error, some of the dimensions of the German N.A.G. railcar described in AUTOMOTIVE INDUSTRIES for Oct. 5, p. 664, were given in feet and inches instead of inches and decimal fractions thereof. The correct dimensions are as follows:

Length of railcar overall.....	38 ft. 7 in.
Length of railcar chassis.....	35 ft. 2 in.
Wheelbase	165.5 in.
Width of car body.....	103.2 in.
Gage (standard German railway) ..	56.5 in.
Wheel diameter	31.5 in.
Spring length	59.2 in.

Four New Methods in Spring Production

Novel stock marking system, special furnace arrangement and automatic cambering machine using chains instead of solid plates in forming operation are features of interesting plan for manufacture of springs. Shears brought to stock.

By J. Edward Schipper

MODERN production methods came into use in spring manufacturing later than in the making of most other automotive parts. Spring builders inherited many of their methods from the carriage builders who preceded them and, until recently, failed to discard all those phases of carriage practice which were not in line with modern needs.

Efficient spring production methods have been developed rapidly, however, in the last three or four years. Most factories making springs now have installed a large number of labor saving devices, possess up-to-date equipment and use modern methods throughout. These things are common to most establishments. There are four special features, however, in the production system of the American Auto Parts Co. These are:

1. A novel stock marking system which facilitates grading operations.
2. Shears are brought to the stock instead of stock being brought to the shears, as is common practice.
3. New features in the automatic cambering machine. These include a use of chains instead of a solid plate in the forming operation, which gives the quenching oil a better chance to circulate around the cambered leaf.
4. A particularly efficient arrangement of furnaces.

The shop in which these methods have been developed transforms about 3,500,000 lbs. of steel into springs each month. Less than one-half of one per cent of this material finds its way to the scrap pile. Twenty-six furnaces, divided into five sets, are used. These furnaces burn 75,000 gal. of fuel oil per month. The shop is arranged in four sections so that it practically constitutes four spring shops in one. Three of these sections are occupied with automatic machinery on which are performed the major operations, such as cambering, tempering, drawing, etc. Small orders requiring special hand work, quick delivery requirements, and supplementary operations of various kinds are taken care of in the fourth section.

Marking Stock Sizes on Wall

The method of marking the wall behind the stock rack is the first important departure from common operating practice.

A large white band is painted around the room at a height sufficient to clear the top of the stock when piled to maximum height. On this is painted plainly the size of the strips of spring stock as shown in Fig. 1. The stock is stored immediately adjacent to the shearing department thus minimizing the effort required to bring the stock to the shearing machines.

This is a scheme which could be employed to advantage in other than spring shops as it clearly defines the size of the stock, not only denoting the location for it in unloading, but also safeguarding against mistakes in grading afterwards.

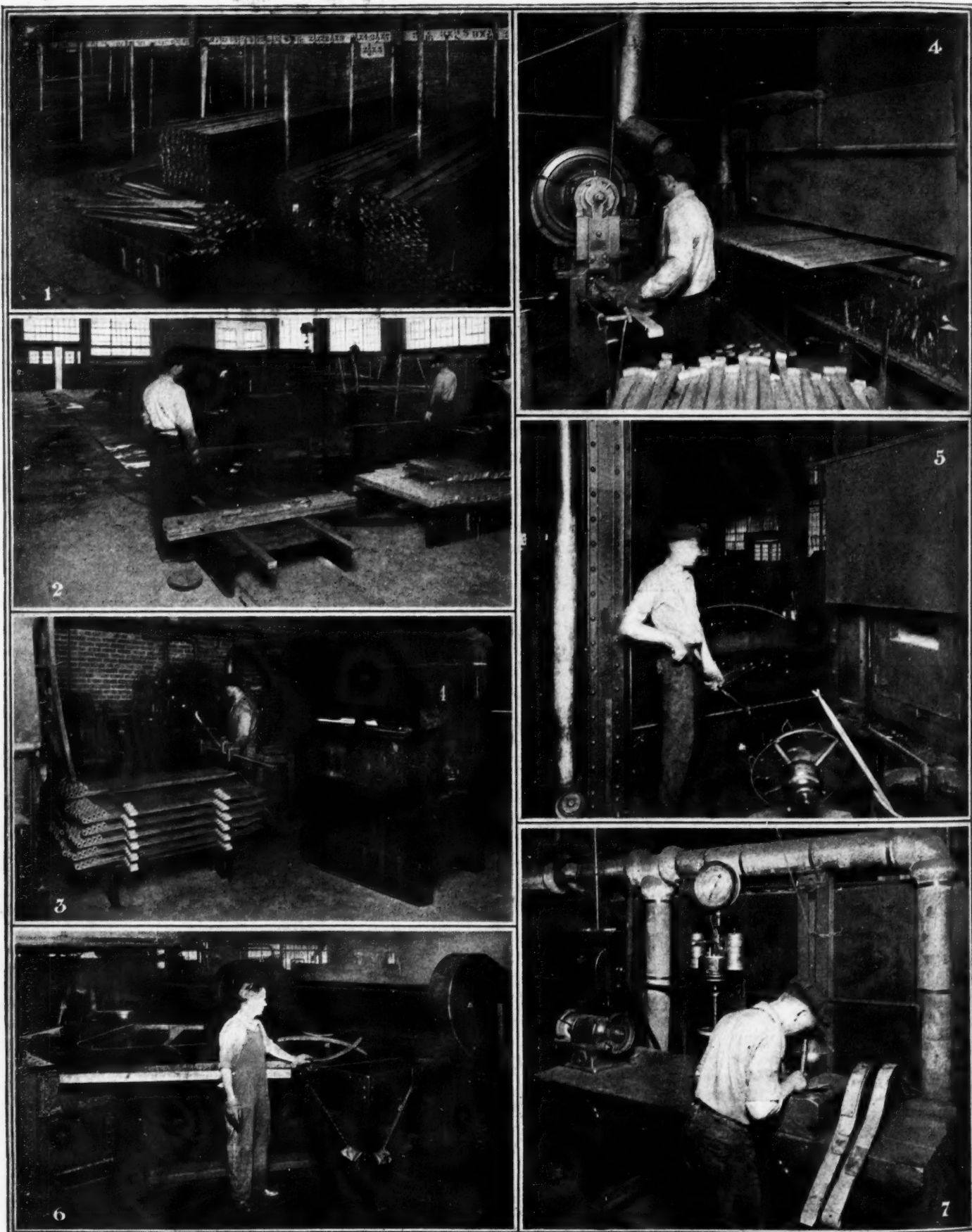
Movable alligator shears are employed extensively as a further aid in reducing the movement and handling required for the stock. These shears are moved to the pile instead of the pile being moved to the shears as is usually the case. Even the large shearing machines are of the semi-stationary type. The overhead crane can readily pick up a big shearing machine, if necessary, and move it to any point on the shearing floor. Fig. 2 shows one of these shears in operation.

Movement of Stock

All stock is under the jurisdiction of a shearing foreman up to the time the shears cut it to the proper length. These lengths are turned over to the inter-department transfer which then becomes responsible for the stock and is charged with the job of moving it to the proper machine and passing it along from operation to operation until it is ready for assembly.

The steel is loaded on skids formed of pressed steel and is moved about the plant on trucks with elevating platforms. The platform slips beneath the skids and is then raised, lifting the skids from the floor and permitting the material to be hauled about the plant and readily deposited at any point required. All of this is handled by the inter-departmental transfer, which is a separate transportation department. Before the stock is turned over from the shearing department to the inter-department transfer, the rough plates, which have been sheared off to length, are weighed on a General Automatic Scale Company weightograph. This is a ready means of checking, not only the load, but also the amount of scrap, as all scrap for that load is weighed with it and deducted. These weights form part of the cost figures, which are very carefully kept. Costs which are often lumped and charged to overhead are, by this plan, worked out in detail and form part of the records kept of every job. Instead of a general scrap charge being made, every individual job is charged with its own scrap.

The Coulter-McKenzie eye machine, in which each eye on the main leaves is formed in one operation, is another interesting production development used in this plant. The ends of the leaf are heated and applied to the machine, which first bends the end down, then cuts a scarf or bevel on the end of the leaf and wraps it completely over to form the eye. A pin then goes through the eye which has been formed, sizing it out to the proper shape and



1—A white band along the wall behind the stock pile carries very plainly the stock sizes, thereby greatly decreasing chances of error in grading. 2—Instead of moving the stock to the shears, by this arrangement the shears are moved to the stock. Note the alligator type shears mounted on rollers. 3—Forming the eye on main leaf. Note the convenient position of the furnace and the skids used for carrying the springs. 4—Punching the oil hole in the spring eye. 5—Automatic cambering machine. Spring leaves drawn from furnace are placed in automatic cambering machine which forms camber and drops the leaves into oil quenching bath. 6—Another view of cambering machine showing how conveyor brings leaves from the quenching bath to the sorting tables. 7—Brinell test immediately adjacent to the annealing furnace.

also establishing its alignment. After the second eye is turned, pins are put through both eyes. The eyes are gaged by putting bars or mandrels into them and checking the distance between the bars, 18 in. out from the longitudinal center of the leaf. The space between the bars at this distance is not permitted to differ more than $\frac{3}{32}$ in. from the distance between the eyes at the center of the leaf.

Punching the Oil Cup Hole

The oil cup hole is punched without the use of a bottom die, as shown in Fig. 4. This is accomplished by heating the eye to the proper temperature. Reaming and facing the eyes are also done in the main leaf department before these are ready to pass along and join the other leaves. This is an ordinary reaming and facing operation common to all spring shops.

As in all well equipped spring shops, the furnace work is automatic. The spring leaves are put in a walking beam type of furnace through which they pass in 20 min. The leaves are laid on the furnace table in order and the temperature in the furnace is graduated upward from cold in one end to a soaking heat at the other. Each movement of a walking beam mechanism moves the springs 4 in. The springs travel 22 ft. passing from one end to the other. This is a McGann-Harrison furnace.

The leaves are removed from the end of the furnace and set in the automatic cambering machine which immediately bends the spring leaf to the proper camber and douses it into the oil bath below. An unusual feature about this cambering machine, Fig 5, is the use of chains for the cambering die face instead of a solid piece of steel. This special construction permits the tempering oil to circulate freely around the leaves. The oil bath at the bottom of the automatic cambering machine is kept at a temperature of 120 deg. which is maintained by having fresh oil enter at this temperature and by draining out the main body of oil through the opposite end. Thus, the

oil is continually kept in circulation. The oil is cooled by water, which itself is kept cool by a cooling tank outside of the building.

A conveyor at the bottom of the machine, Fig. 6, takes the leaves out in about the same order that they enter the bath, so that, as they leave the machine, they can be readily sorted on a sorting table. The conveyor and the automatic cambering mechanism are operated by a $7\frac{1}{2}$ hp. electric motor.

After the leaves have been sorted out, they are put through a McGann-Harrison automatic draw furnace. Forty minutes are required for them to pass through this process. Then they are allowed to cool slowly at atmospheric temperature to anneal.

Immediately adjacent to the draw furnace is a Brinell instrument. The inspector does nothing else but Brinell springs as quickly as he is able to operate the instrument, as shown in Fig. 7. A close process check is kept in this way, on the work of the furnace. A very complete record on the steel characteristics is maintained by this Brinell instrument, by the graphic chart of furnace temperature, and by the laboratory tests given every batch of steel when it comes into the yard. Steel is ordered by both chemical and physical specifications so that little or no chance for error is introduced.

Process of Assembly

Assembly work follows along the usual lines for such processes. The assembly table is a moving, progressive platform. The first step is, of course, to press in the bushing and to grind off the ends to the proper width. There are four assembly tables, one of which holds the shop record of 2932 springs assembled in a 9 hr. period.

As a final check after assembly, every spring is given a load test in which it must show the desired deflection under load and also must check back to indicate that it has not taken a permanent set under this test.

New Type of Hydraulic Shock Absorber

A SHOCK absorber, of the hydraulic type has recently appeared on the market under the name of Manzel. It is attached to the frame of the car and is connected to the axle by means of a webbed strap and clamp.

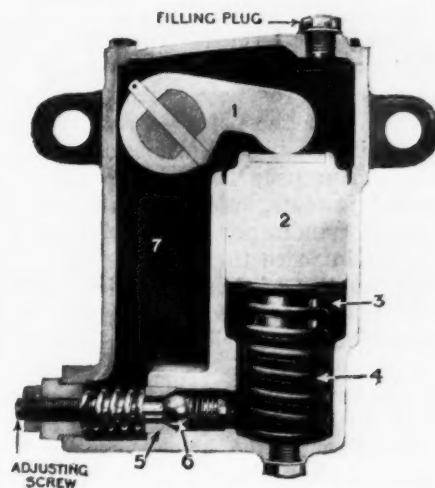
The device consists of an inner and outer chamber both partially filled with oil. Snubbing action is secured by forcing the oil from the inner to the outer chamber through a small double acting valve.

When the car spring is compressed the cam (1) is released and the piston (2) is forced upward by a large spring (4) and oil is drawn into the inner chamber (3) directly beneath the piston.

When the car spring expands the arm is drawn down by the webbed strap and acts through the cam (1) on the piston (2). The piston forces the oil from the inner chamber into the outer chamber through the small valve (6) which exerts a retarding force on the spring action. When a severe expansion occurs the initial shock opens the relief valve (5) permitting a sufficient volume of oil to pass through to relieve the strain. The relief valve then closes and the oil passes through normally.

The valve action may be regulated for any weight car by an adjusting screw which increases or decreases the valve (6) opening.

This shock absorber is made by Manzel Brothers Co.



Cross-section of Manzel hydraulic shock absorber

THE Automotive Division of the Bureau of Foreign and Domestic Commerce handled 17,678 inquiries during the year ending July 1, 1922. This volume was greater than that handled by any other division except the Fuel Division and the Textile Division.

How American Tires Are Sold in the Belgian Market

American tires compare favorably with best European makes. Michelin and Englebert lead in popularity. American handicap lies in lack of persistent sales effort and severe competition. More liberal export policies will help to win market.

By P. L. Palmerton*

Chief, Rubber Division, Bureau of Foreign and Domestic Commerce

AMERICAN tire companies, with few exceptions, have not persistently cultivated the Belgian tire market, with the result that their share of the trade is not large. The sales of American tires are at this time largely in two well-known makes, and one other is entering. Other standard American makes are represented, but have not succeeded in securing a notable share of the business.

The premier place in the tire market is held today by the Michelin Co., of Clermont-Ferrand, France. This company alone is supplying at least one-half and perhaps slightly more of the automobile tires in use.

In second place is the Englebert Co., of Liège, Belgium. This may cause surprise because the company has not been prominent and has not become a highly important factor in any market outside of Belgium. The Englebert is very commonly used and its share of the trade can safely be put at 20 per cent.

The French Goodrich Co. is easily in third place with both cord and fabric tires. The three leading competitors named are securing perhaps more than 80 per cent of the tire replacement business.

During the two years following the armistice, American tires were in the best position they ever had in this market. Before the war they were almost unknown to the Belgian motorist. As the post-war scarcity of tires vanished, it became increasingly difficult for American brands to compete with European tires, which reached the market with lower first costs, less transportation charges, and slight exchange handicap. American tires were accordingly higher in price than the European brands and while the high quality of American tires was recognized there was no predisposition in their favor sufficiently strong to offset the lower prices of pre-war favorites.

IN most cases American tires have been represented by distributors rather than by factory branches or personal representation by the home company. These distributors have not always been well chosen and they have, as a rule, had but little enthusiasm in pushing the American tires since their higher price made their sale difficult.

Many of the American tires seen in Belgium today are of makes not well-known in the United States. These come for the most part from clearance stocks from small tire

factories which have been sold direct by the factories or by New York tire jobbers to Belgian importers. This business has been wholly dependent on extremely low prices and is of course only temporary.

European makes of tires not mentioned above which are sold on the Belgian market in sufficient quantities to make them worth mentioning are Dunlop, Pirelli, Continental, Bergougnan and Jenatzy.

The causes underlying Michelin's strength in this market are the same that hold true in other European markets. The company is old and is everywhere well known. The product has been consistently good and has been aggressively merchandized. The prices of Michelin tires have always been low. These things have built up a consumer acceptance which is the basis of Michelin sales today. The tires are accepted by motorists without question and the way in which the trade is handled operates against the motorist being sold any other brand.

THE Englebert tire derives its popularity principally from the fact that it is a Belgian product. The natural advantages arising from its location enable it to adopt more liberal policies toward the trade. The plant at Liège has a capacity of 1000 automobile tires a day. The Jenatzy plant at Brussels has only a small tire production.

Dunlop and Bergougnan are more prominent in the solid tire trade than in the pneumatic. Continental is represented in Brussels but has not yet made much progress in re-establishing itself, although the Continental cord tire is not infrequently seen. Giant pneumatic tires of this make up to size 40 x 8 in. are in use in Brussels. The tire is handicapped by an import duty of 20 per cent as compared to 12 per cent imposed on tires from countries other than Germany. The second German tire, the Peters-Union, is seen in Belgium only as original equipment on German automobiles.

Unquestionably American tires surpass in quality any European makes offered on the Belgian market. This margin of superiority is not, however, so great as is popularly supposed in America, and it is impossible for a careful observer to disregard the good qualities of the Michelin tire.

The Belgian motorist apparently sees little to choose between the Michelin and the American tires. Other European tires do not so closely rival the American and if purchases were made entirely on a quality basis, Ameri-

*Digested from U. S. Department of Commerce, Trade Information Bulletin (Rubber Division) No. 65.

can tires would inherently command a much better place in the trade.

The chauffeur, however—it must be remembered that the big majority of Belgian cars are chauffeur driven—is not so much interested in the quality as he is in the rebate which he is to receive from the dealer. Since these rebates are given with all purchases, the chauffeurs are not particularly attracted by tires whose long-wearing qualities make purchases too infrequent. The quality appeal wins trade only from those motorists who drive their own cars or who take the trouble to check results received from tires purchased by their chauffeurs.

AMERICAN tires have recently come into a more favorable position in this market through price reductions which have brought their consumer price down to a level with the Michelin. The ascendancy of the Michelin tire enables that company to take the lead in matters of price and policy. Michelin tires have heretofore been priced below American tires and dealers effected only small sales of the latter as a result.

At this time all popular tires are offered to consumers at practically the same price; in fact, the differences are so slight that some garages handle several makes and quote for all of them from the Michelin list.

Michelin has turned its production almost wholly to cord tires, the only fabric automobile tires which are continued being in small sizes for light cars.

The fact that American tires have recently been reduced in price should not be taken as indicating any present or future "price war." Tire exporters who have become convinced that volume business depends on equal competition have led in the reductions and in so far as can be ascertained, no factor in the trade is expecting to make further reductions in the near future.

The lower prices of American tires can be expected to encourage the distributors who are importing them and should greatly stimulate their sale among those motorists who make quality a ruling consideration. Both of these things will probably improve their acceptance by the dealers, who foresee a quickened demand for them. However, contracts made for the current year are preventing an extensive or immediate reaction.

Exchange conditions naturally make business difficult for American tire exporters. The Belgian franc stands to-day at almost exactly eight cents while its par is 19.3 cents. The French franc is worth only a trifle more than the Belgian franc, so that French manufacturers find but a slight handicap where the Americans find a very formidable one. This feature reacts particularly against native importers of American tires, who object to risking exchange fluctuations while goods are on order.

Tires imported into Belgium are subject to an import duty of 12 per cent ad valorem. On German made tires the duty is increased to 20 per cent. There are also two transmission taxes of one per cent each, and the final purchaser pays a luxury tax of five per cent.

The tire market depends upon approximately 27,000 passenger automobiles. At the present time, when the fabric tire is being replaced by the cord, it is difficult to

estimate the average number of tires used per car per year. Roads are only fair, with a resulting hard wear on tires and the average number required per car per year has likely not fallen below four. The market for tires is slowly but steadily expanding, as the popularity of the motor car is apparently permanent and importations are heavy.

The straight side tire has not gone far toward replacing the beaded-edge tire. Until recently several popular American cars were imported in millimeter beaded-edge rims but at this time almost all American cars are brought in on straight side tire and rim equipment unless they are light enough to employ beaded-edge tires in inch sizes from 30 x 3 to 31 x 4.

Prominent factors in the tire trade estimate that present requirements are 84 to 86 per cent for metric beaded edge, 10 to 12 per cent for inch beaded edge (mostly 30 x 3½), and 4 per cent for straight side.

The most popular metric sizes are 710 by 90 (used on Citroen), 820 x 120, 915 x 105, 895 x 135 (popular on Belgian cars, 880 x 120, and 935 x 135.

The straight side inch sizes mostly used are 32 x 4½ (used on rear wheels of Ford trucks), 32 x 3½, 32 x 4, 33 x 4½, 35 x 5, and 31 x 4.

The progress of the cord tire has been very rapid. As noted above, Michelin has discontinued all metric fabric tires above the 80 millimeter section. Certain European and American companies are following Michelin's lead in this regard, since it already has become a difficult matter to sell fabric tires in other than the smaller sizes.

Michelin has gained a distinct advantage from the early appearance of its cord

tire and, inversely, American tires are not yet able to furnish cord tires in metric sizes are feeling the handicap very keenly. There is a feeling that fabric tires in the smaller sizes will continue to find a reasonable demand, but the general acceptance of the cord tire has been so definite and sudden as to be somewhat amazing. It may be said that a cord tire in a full range of metric sizes is necessary if a company is to become a factor in the Belgian market.

The aversion toward the gray tube is not felt so strongly as in some other European and South American markets. It is believed that the red tube sells more easily than the gray and it is in fact the one generally used, but where gray tubes have been offered their color has not been found seriously to hamper their sale.

THE steel studded tire is rarely seen to-day and importers and distributors report that they have cleaned out their stock at 50 per cent or more off list prices. Michelin shows the steel studded tire on its price list, but it is not regularly stocked since the demand for it is almost nil.

The tire business is done on a consignment basis. This method has become so firmly entrenched and so commonly accepted that the amount of goods sold outright to dealers is negligible. It is customary to place only small stock with dealers, arranging for easy replacement of stock when the dealer reports sales in certain sizes. Dealers commonly stock many brands of tires and

This report gives a comprehensive study of the Belgian tire market. It shows where competition is the keenest, outlines customary trade practices in a concise but practical way and tells facts which cannot be gleaned from export figures alone.

* * *

The American tire exporter who wishes to learn where his product stands in the Belgian market, why it is in its present position and what can be done to obtain a greater volume of business, will find all the essential facts in this story.

let their sales be guided almost wholly by popular demand.

The Michelin dealers, however, contract not to become agents for any other brand, being permitted to secure tires of other brands only for filling definite orders. This company is able to secure such agreements from its dealers on account of the powerful consumer acceptance back of the tire. The agreement is not always religiously observed or enforced, but if a Michelin dealer does accept a second stock it is sure that he will not actively push it or advertise its presence either through the press or through signs erected at his place of business.

Dealers sell at the consumers list price furnished by the tire company and retain a percentage according to the contracts. The usual discount for dealers is 15 per cent. In addition a rebate is made to the dealer at the end of the year if the total yearly sales attain a figure specified in the contract.

At the time the contract is signed the dealer estimates the amount of business he can do with the brand in question and the figure inserted in the contract is the minimum which must be reached if a rebate is to be granted. Since the percentage of rebate increases in proportion to the amount of business done, the dealer naturally chooses the highest amount which he considers reasonable. The rebates commonly offered by Michelin are: On 25,000 francs, 7 per cent; on 50,000 francs, 8 per cent; on 75,000 francs, 9 per cent, and on 100,000 francs, 10 per cent.

Variation in Rebate Policy

While obviously the policy controlling the granting of rebates should be uniform and consistent, great variance can be noted between different companies and sometimes within the practice of one particular company. Arrangements are sometimes made to cover lesser amounts or intermediate amounts from those given above.

Since there is no standard policy regulating the amounts of rebates, it is necessary for each manufacturer or distributor either to adopt and maintain one

scale of rebates or to meet competition as it is found, by giving more or less as appears necessary to get the dealer to sign.

It may be said that the scale of rebates given above is about the average, and divergence from it may be either in the direction of increasing or decreasing the amounts of business required.

Some dealers prefer to receive a higher original discount, usually 20 per cent, and a smaller rebate at the end of the year and certain companies vary their policies to meet this demand.

The custom of influencing chauffeurs which was originally started by occasional garages that were willing to reduce their profits to get volume business has become so general that tire dealers now regard it as inevitable.

Chauffeur Discounts

The customary discount to the chauffeur is 5 per cent, and some companies attempt to have their dealers adhere to that figure. It is common, however, for chauffeurs to receive as high as 10 per cent and in some cases the allowance exceeds this percentage. It is claimed that the popularity of Englebert tires rests to a large degree on the very high discounts given to chauffeurs purchasing them. The dealer is able to give such large discounts, of course, only with the aid of the company.

No definite mileage guarantees are given on tires. They are guaranteed only against defects in workmanship or material. Returned tires are adjusted on the basis of mileage rendered as compared to a mileage that the motorist would have been justified in getting.

As to the future of American tires in Belgium nothing can be foreseen which should prevent an agreeable growth in their volume if exporters are disposed to accept the rather severe conditions imposed. Volume business rests on prices so low as to allow only meagre profits, and competition is so keen and competitors so firmly entrenched that only persistent sales campaigns can produce results. The impression can not be avoided that only companies willing to adopt the most liberal export policies can hope to succeed.

The Gasoline and Motor Fuel Situation in Peru

NEARLY all of the gasoline used in automobiles and trucks in Peru is of native production. Not only does Peru produce gasoline for home consumption, but during the first half of 1922, has become a large exporter of petroleum. Under "petroleum," the custom house probably classes petroleum products, of which gasoline is one. The oil beds now operated are in the region around Tumbes, of which Talara is the port.

Gasoline produced in Peru is, naturally, of different grades. One grade, not very good, but perhaps what is being now used in the cheaper grade of automobile, retails for one sole a gallon. A sole is now worth about 40 cents, United States currency. A better grade sells for 6.30 (six soles thirty cents) for five gallons. Peru produces a grade of gasoline fine enough for aeroplanes.

In Lima there are about half a dozen gasoline street pumps; and as many more oil, tire and accessory stores, where gasoline is sold. The only difficulty about getting gasoline in Lima is that sometimes supplies do not arrive fast enough from the oil fields.

Outside of Lima, the sub-automotive centers of Peru, such as Chiclayo, Trujillo, Chincha, Ica, Arequipa, etc.,

have houses that supply gasoline. Inter-city motor travel is beginning in Peru, so far as the roads permit, but there is no provision for supplies of gasoline en route. Provision must be made at terminal points.

In the Sierra, or mountain region, the price of gasoline is very high, owing to the cost of transportation, a cost which is augmented at times by the contents of the gasoline cans being stolen en route. On this account it is sometimes suggested that steam motor cars be used, or electric motor cars, the electricity being developed from the water power in the mountains.

Alcohol can be produced very cheaply and abundantly in Peru. It has been successfully tried out here as a motor fuel. Its manufacture for motor use at present is rendered impossible by the fact that the government tax on alcohol is about three times what it costs to produce a gallon. Efforts have been made to get a government exemption on denatured alcohol, but so far without success.

Lubricating oil is produced in Peru, but not of a high grade. The native lubricating oil is, however, used by the cheaper grade automobiles in Lima.

All-Metal Airplanes Discussed by Metropolitan Section S. A. E.

Designers are attempting to materially decrease the power required to fly by minimizing parasite resistance and lessening dead weight. Ways for making planes safer and cheaper must be found. Duralumin now being used with much success.

“ALL metal planes, to date, can be called experimental. The future commercial airplanes, however, will undoubtedly be an all-metal construction. Metal planes mean greater safety to pilot and cargo; a possibility of considerably lighter weight; less production cost, particularly as quantities go up and the demand increases; easier servicing and simple repairs provided the airplanes are designed with this idea in view.

“It cannot be expected that the first metal construction attempts of any manufacturer will be a success in every particular, but, if America is to lead in aircraft, it must lead in metal aircraft, as it is my opinion that, in a comparatively few years from now, wooden airplanes in the air will be scarcer than wooden ships on the sea, and that all airplanes flying under insurance rulings will be of all-metal construction.

Low Cost Depends on Metal Construction

“Thick-wing airplanes are developing fast, both in monoplane and biplane types. Retractable chassis, wing-type radiators and all those items that the recent Pulitzer events have shown to be practicable, will appear shortly in commercial airplanes and increase their profit-paying possibilities. But if safety and low cost are to come with these items of greater performance, then must metal construction and production methods be applied to the producing of an airplane for American air-services that shall be safe, cheap, economical and long-lived. Only by the production of a real commercial airplane can commercial aviation come in America.”

These are, in brief, the conclusions reached by William B. Stout in his paper presented last week before the Metropolitan Section of the Society of Automotive Engineers. In reaching them Stout said in part:

“The attempts of designers to-day are largely toward reducing the amount of power required for flying by two methods: (a), by reducing the dead weight carried for a given useful load and (b), by seeking a minimum of parasite resistance toward forward movement, as against useful resistance which gives back a resultant lift.

“In the past, too many designers have approached the airplane from the standpoint of wing curve, lift-drift ratio and the like; forgetting that, after all, he who can build the lightest areas for a given strength has produced at least the fundamentals of the best airplane. Airplane design to-day, therefore, is largely a structural problem.

“It must be admitted that the present-day airplane, as now in use, carrying about 28 to 30 per cent of useful load, and a pay load of 3 to 5 lb. per hp., cannot hope to be the eventual commercial passenger or freight carrying

machine. Ways must be found, if a real commercial airplane is to be available for air lines, for improving the structural part of the present type of airplane to make it lighter and stronger and cheaper. This can be done by using better materials, providing better structural arrangement, and then combining with them improvements in aerodynamics. Aerodynamic improvements include better wing curves and the elimination of parasite resistances by better arrangement of the design and better streamlining of those parts that must be exposed.”

Stout firmly believes that the future airplane will have no parts exposed to the air which do not give back lift in return for their resistance to motion through the air. In consequence his work for some years has been toward the development of planes with such thick wing section that the engine, pilot and practically all structural members are within the wings. He has been a pioneer in this field and outlined briefly the development first of a plywood and then an all-metal plane, the latter having been recently completed. This machine, which has a span of 60 ft., an area of 790 sq. ft. weighs 6557 lb. light, carries 3260 lb. useful load, is fitted with two 300 hp. engines and is capable of traveling at a speed of 113.5 m.p.h. with full load. It is built largely of duralumin and is said to be the first American built all-metal plane to fly in this country.

Superiority of American Duralumin

Stout stated that American made duralumin is superior to the German product. He pointed out the advantages of duralumin as compared to steel and showed samples of several sections which have proved satisfactory in the designs with which he has been identified.

At the request of Chairman Kemp, Stout spoke briefly and enthusiastically regarding the recent airplane races in Detroit. He said that over 100 planes from various parts of the country as far removed as San Francisco had flown to the meet and that in none of these flights or in races had there been any accidents to pilots or passengers. This had impressed greatly those who attended the meet as indicating the safety of flight even when exceedingly high speeds are attained.

As to engineering features he mentioned the use of wing radiators and retractable landing gears as an indication of the effort to decrease parasite resistance. One machine with a folding type of landing gear was found to be capable of making a speed of 190 m.p.h. as against 175 m.p.h. for machine which was a duplicate in all particulars except that it had a non-folding landing chassis.

There were so many machines entered in the race that

they were sent away in two groups. The Verville-Sperry machines were winners in the first groups and as a result held the world record for about an hour until the conclusion of the trials of the second group in which the winning Curtiss machines were victorious. Inasmuch as the Verville-Sperry machines are of the thick wing section type, Stout regards this performance as a vindication of his views on this type of construction. He nevertheless paid a high compliment to the winning Curtiss machines which belonged to another school of design. They are fitted with exceedingly thin wings, but great care is used in seeing that all the non-lifting surfaces are properly stream lined in order to avoid unnecessary head resistance.

Future Design Discussed

Commander Richardson of the Navy Department opened the discussion by stating that he frankly disagreed with Stout's conclusion to the effect that future planes will tend toward a design in which all exposed surfaces are lifting surfaces. Richardson favors the Curtiss type of design in which the lifting surfaces are made the most efficient possible while other exposed parts are stream lined to minimize their resistance.

He also expressed the view that metal construction is likely to come ultimately for quantity production but is too expensive where planes are built in small numbers.

In contrast to this view Mr. Fowler of the Aeromarine Co. expressed the belief that duralumin will ultimately replace wood construction. In this connection Stout drew attention to the tendency of wooden floats such as are used on some seaplanes operated by the Aeromarine Co. to absorb large quantities of water thus materially to decrease the pay load which the machine can carry. With a metal float this difficulty would be overcome.

H. M. Crane stated that he agreed with Stout concerning the difficulty of designing satisfactory compression members. He stated that the failure of such a member had resulted in the loss of the large dirigible which this country purchased from England and which crashed during its acceptance trials. It is difficult, he said, to apply in practice the information gained on machine tests of compression members. Localized stresses are hard to avoid and are often the determining factors, especially in all metal construction.

Commenting upon the recent Detroit races, Crane said that the performance of the machines there used, all of which were of American design and manufacture, should be the occasion for national pride. In spite of much criticism and adverse comparison with European products, Crane expressed the view that there is nothing wrong with American aviation and that our aircraft compare favorably with all others. The Aeromarine Co. has demonstrated that a commercial success of airplane operation is possible in this country, while the Liberty engine, which has been but little changed since the war, has established an enviable reputation. One indication of this fact is, he said, the recent record endurance flight of a machine equipped with a Liberty engine.

Commercial Flying a Big Success

Mr. Bruno of the Aeromarine Co. spoke briefly of the success of the Aeromarine service between Cleveland and Detroit last summer. Two planes had flown daily in each direction adhering to a schedule with as much regularity as is common in express railway service. During the two months of operation over this route there had been no forced landings, and many prominent business men had availed themselves frequently of the service.

Charles M. Manly commended Stout for his persistent pioneer work in the development of a new type of machine. Referring to the Curtiss-Army plane which established a

record speed of 248 m.p.h. recently in Detroit he said that he had figured that it would require about the same power to propel through the air normal to the direction of travel a surface having an area of 3 sq. ft. At the speed in question the pressure on such a surface would approximate 1 lb. per sq. in.

In reply to a question as to his reason for abandoning plywood construction in favor of all metal construction, Stout replied that plywood is affected by atmospheric conditions and that he considers metal construction safer, especially in case of a crash. He also prefers to trust metal rivets rather than glue as a means for fastening parts together. He said, however, that plywood can be depended upon to give a more uniform strength than wood in its natural condition so that lighter sections can often be used when plywood is employed.

Stout contends that all metal construction is not necessarily more expensive than wood. He expects that it will soon be possible to produce planes of a carrying capacity up to about one ton rather more cheaply than high grade cars of similar capacity.

Asked concerning the effect of salt water and of vibration upon the duralumin structure, Stout stated that there is a difference of opinion as to the ultimate effect of salt water. Duralumin which is not heat treated is attacked by salt water, but when properly heat treated the effect of salt water is, he believes, practically nil. The effect of vibration is largely dependent upon design as in the case of other metals. If zinc impurities are present in the aluminum employed in making duralumin, the effect of vibration is more pronounced. In this connection Commander Richardson stated that vibration appears to have no greater effect upon duralumin than upon other metals.

In concluding the discussion Stout emphasized the fact that a successful machine must be designed for the particular material employed, otherwise the result is not apt to be satisfactory.

THE Automotive Division of the Bureau of Foreign and Domestic Commerce has sent out a questionnaire to all representatives of the Department of Commerce in order to secure information on the world's markets for American motor fire-fighting apparatus and equipment.

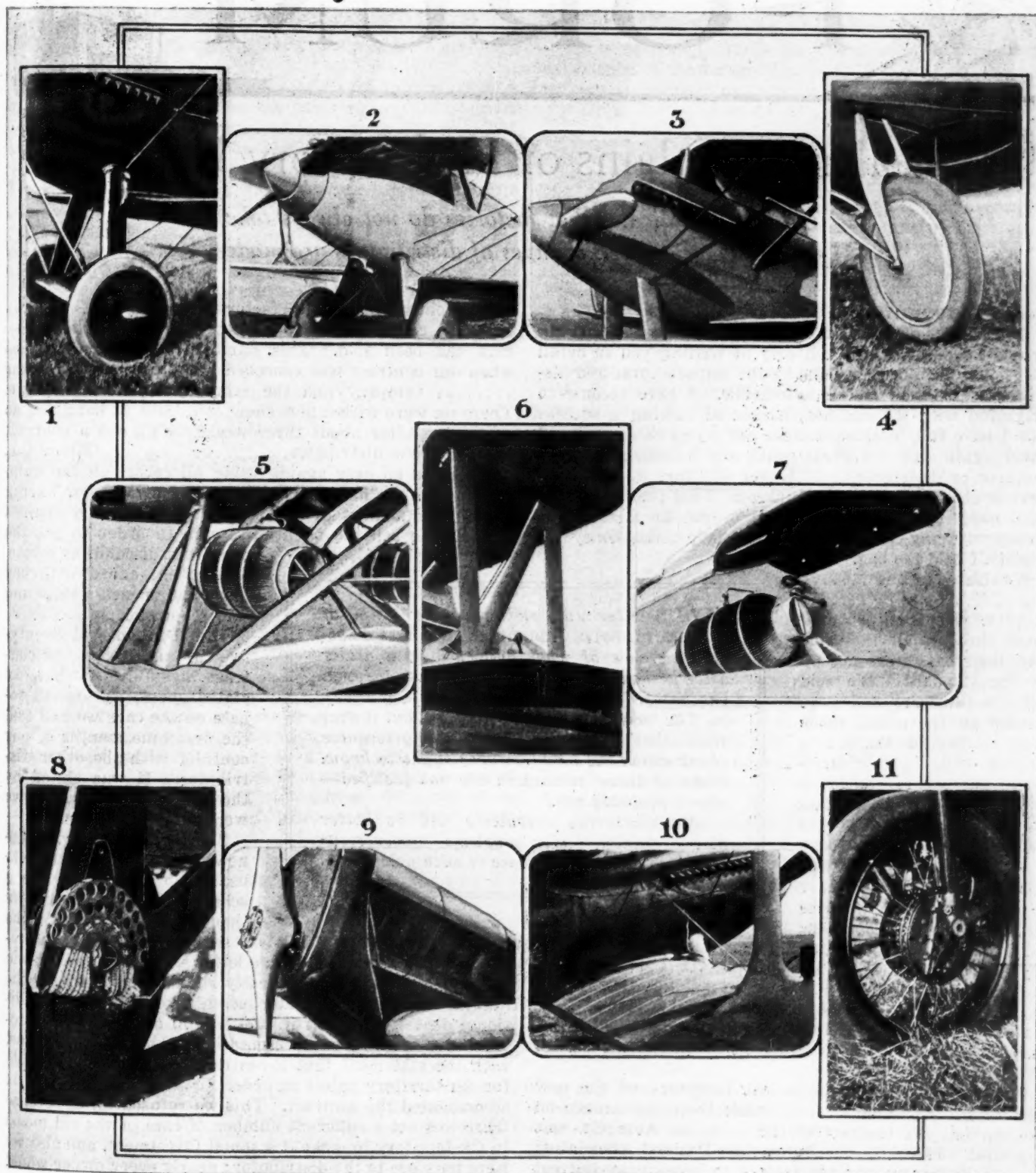
The following questions are asked in the questionnaire:

1. Is motor equipment being used?
2. Is purchase of new equipment being contemplated now or in the future and what are the chances of American firms obtaining orders?
3. What firms have furnished fire-fighting equipment?
4. In what manner and by what official is equipment purchased?
5. Is it desirable to send advertising matter to the official in charge?
6. Brief description of the water supply system.
7. Information regarding construction and paving of streets.
8. Information regarding construction and height of buildings.
9. Other pertinent information affecting the sale of American fire-fighting equipment.

Of the replies received from 177 cities, 40 have been in the affirmative, 109 in the negative and the remainder have signified possibility of American firms supplying equipment at a later date; 116 of the cities use modern equipment.

A list has been published by the Automotive Division giving the names of the cities, answers to questions Nos. 1, 2, 3, 5 and reference numbers. Complete reports on the cities mentioned are supplied by the division to those requesting and giving the reference numbers.

Details of Pulitzer Race Planes



1—Landing gear, Curtiss-Army Racer (note strut arrangement). 2—Nose of Verville-Packard (note radiator between struts). 3—Curtiss-Navy Racer powerplant. 4—Retractable wheel, Bee Line Racer (note recess in bottom of wing to receive wheel and struts). 5—Lamblin radiator on landing gear struts, Navy-X. 6—Wing struts, Curtiss Navy Racer. 7—Lamblin radiator installation on one of Bee Line Racers. 8—Shock absorber detail, Loening landing gear. 9—Loening monoplane powerplant. 10—Wing surface radiator and I-strut, Curtiss-Army Racer. 11—Retractable wheel, Verville-Sperry (shock absorbers inside of hub)



The FORUM



A Dealer Complains of His Factory Relations

This letter indicates that factories do not always take care of dealers when changes of distributors are made

Editor, AUTOMOTIVE INDUSTRIES:

As a reader of AUTOMOTIVE INDUSTRIES for the past six or eight years, I take the liberty of writing you in detail just how I have been handled by the manufacturer and distributor of a well known automobile. I have become so disgusted with the dealer's chances of making a success that I have fully decided to clean out my stock of cars and never again sign a contract with any automobile manufacturer or distributor. If I ever sell cars again I will have to change my way of thinking. I am positive that I shall never again sign a contract or put up any deposit money with any concern, in order to help make money for it while I hold the bag.

We started selling and cars in in 1918. We remained with them through all the time that their cars were not up to the standard. We sold quite a few cars and gave service on them that made every owner of the car a booster while in other territories these cars could not be given away. We claim the service made the cars and not the manufacturer.

We were selling under the Sales Co. of at the time the new series came out. This new car looked to be a very good proposition and we secured the entire county rights through the Auto Co. and opened a branch in on April 1, 1922. Just at this time the distribution contract of the Auto Co. was cancelled for some unknown reason and, I may add, caused quite a confusion in automobile circles in

Just when things begin to look brighter and the new series and made their appearance on the market, the contract of the Auto Co. was cancelled. The Automobile Dealers' Association sent representatives to the factory to investigate and get the facts on this deal. But the factory refused to make any statement at that time. For this reason the Automobile Dealers' Association refused the new distributor space at the annual automobile show and all the dealers have been boycotting this line ever since. I now understand that the Auto Co. has brought suit for damages against the Motor Co. Through all this we stuck with the and were selling them under a handicap.

My contract with the factory, through the Auto Co., called for a rebate of 2 per cent when twenty-five cars had been sold. This number we had not reached when our contract was cancelled with the contract of the company and the remainder of their dealers. There we were with a new showroom lease on hand and no contract. After about three weeks we signed a contract with the new distributor, Motor Co., and started all over again, losing all rebate on the number of cars we had sold on the old contract and having about four months of the contract year—which expired July 21—to sell the twenty-five cars in order to get the 2 per cent discount as rebate.

We went ahead with our plans and opened a sales and service station in on April 1 and sold twenty-five cars under the new contract by July 31 but, as stated above, we lost all rebate on the cars we had sold the first nine months of our contract with the other distributor. It was stated by the new distributor that we were their best agents.

Shortly after Aug. 1 the new contract was put up to us, which we signed with a schedule of all the cars we thought we would use in the

next twelve months. This was sent to the factory and returned as unacceptable, with a letter stating that we should sell more cars. We immediately signed a contract for the number of cars they wanted us to take, put up the additional deposit and sent it back again, only to have it returned by a factory representative, who called upon me, with the statement that a contract could not be accepted for our territory unless an order for \$1,000 worth of parts accompanied the contract. This we refused to do because there was not a sufficient number of cars of the old model in the territory to make it a sound investment, and also we were too close to the distributor; nearly every owner would stop at the distributor's parts station instead of coming to us. The factory man informed us that unless we were to buy all our stock of parts direct from the factory a handling charge of 10 per cent, in addition to the 5 per cent we had already paid, would be tacked on all our invoices. The distributor's place is just five minutes' drive from our branch and we are not permitted to avail ourselves of this service. We informed the factory's representative that we would quit if this went into effect.

THIS letter was written to the editor of AUTOMOTIVE INDUSTRIES. It gives a specific instance of what happened to a dealer after he had stuck by a manufacturer through bad times.

The incident may not be typical, but it does show that dealers have certain grievances about which the manufacturer ought to know. Some of these grievances are not justified—others probably are.

Manufacturing executives will be better able to handle dealer problems, however, as they recognize the presence of such grievances.

We have gone along for two months without a contract and just a few days ago the 10 per cent penalty went on an invoice of parts we bought from the distributor. The writer immediately went to the office and informed Mr., the president, that we were through. The answer was: "All right. Come over any time and get your deposit and straighten out the account. I am busy just now."

Pretty tough, when you have worked for four years on a line to build it up to where the parts and repair business will begin to pay overhead! Never again for us. The dealer always did hold the bag, the factory having no chance to lose and—no trade-in, always getting spot cash. The dealer does the work and the worrying and gets no consideration for his efforts.

We are going back to and take care of our parts and supply business, which has always made money, and let the other fellows sell the cars. We might also add that we are not going to break our necks to buy parts from the Co. We do not believe in pirate parts, but we are going to give the pirates a chance from now on. A factory will never again profit by adding 10 per cent to our invoice.

Curing Wheel Wobble

Editor, AUTOMOTIVE INDUSTRIES:

I note with much interest your article appearing in the last issue with reference to the subject of wobbling front wheels.

The Winton Co. have experienced considerable of this trouble, and with our particular car have always been able to perfect remedy by having the kingpin of the front axle brought to a vertical position with the car not loaded.

Our method of procedure is as follows: We have in our repair department a level spot on the floor the length of the car. We first measure from this floor to the center of each hub cap, and by deflating the tires, bring all of the hub cap centers to the same measurement.

We then square off from the floor, lengthwise of the car, to a position vertical with the king pin. The next step is to measure from the center of both the top and bottom of the king pin to the edge of the square. This will show whether or not this king pin is more than 2 deg. out of the vertical position. We bring the king pin to a vertical position by installing wedges between the front axle I-beam and the springs. When the car is then loaded, the king pin will tip slightly to the rear.

Experience has taught us that we must not allow the pin to tip forward, as the car will then not right itself when turning a corner. We fully realize that the freest steering point to be obtained is when the king pin stands in as near a vertical position as is possible to obtain.

H. R. MATHENY, Service Manager,
The Winton Co.

Editor, AUTOMOTIVE INDUSTRIES:

With reference to the editorial entitled "What Makes 'Em Shimmy?", in the Sept. 14 issue of AUTOMOTIVE INDUSTRIES, I would like to give you a few of my experiences. I believe that there are three principal causes and that the trouble is nearly always the result of some one of these or a combination of two or all three. I have proven these points by actual tests and have cured the troubles in every case.

The most common cause is a condition such that the center of the wheel load is too far from the center of the knuckle pin and quite often along with this trouble one finds the spindle slanting downward at the outer end.

Another common cause is the too nearly vertical position

of the steering knuckle bolts (or pins) accompanied with bushing wear in the tie rod.

The third and least important of all is the lack of sufficient pitch or toe in of the front wheels which alone would not cause the trouble but along with either of the others adds to it greatly.

These few suggestions are based on seventeen years' experience in the automotive world both in designing, repairing and correcting troubles.

LEE ARTHUR, Construction Engineer.

Editor, AUTOMOTIVE INDUSTRIES:

On page 535 of AUTOMOTIVE INDUSTRIES, Sept. 14, you speak about "shimmying." According to my experience this phenomenon is caused by the reaction of the unequal engine torque.

As a matter of fact, I have observed that the phenomenon may be stopped, without stopping the car, by declutching and starving the engine.

To reduce the phenomenon with a given car, remove the play in front spring shackles and bolts, in steering knuckles and in front wheel bearings.

Multicylinder engines with their more even torque are less liable to it; but the flywheel has nothing to do with it, as this does equalize the torque itself, but not the reaction of the torque, which is transmitted through the engine arms on to the front end of the chassis.

The matter, therefore, is very simple and the only reason for its apparent mystery is that many engines (as six-cylinder and twelve-cylinder engines, rotary engines, etc.) are considered to be in perfect running balance. This is only true as far as the balance of masses is concerned, but not for the torque.

Hence these engines also will set up vibration, which may change into violent harmonic oscillations.

Another cause for shimmying, quite apart from the engine, is the same that often causes wobbling of the front wheels. When the front wheels touch the road some distance behind the point of intersection of the steering knuckle pivot axis produced with the ground, wobbling or even their tendency to wobble exerts a reaction on the chassis, which evidences itself by cross oscillations of the front part of the car. This phenomenon, therefore, occurs in riding over rough roads. The front springs rock around the front spring bolts, as a center, but the drag link has a fixed pivot at the rear, hence any deflection of the front springs causes a pull and push action in the drag link. Either the direct wobbling, caused by the road shocks, or the indirect wobbling, caused by the deflection of the front springs may be reduced by introducing some friction in the steering knuckles; that is, by using plain bearings, not ball or roller bearings, between the knuckles and front axle.

If the shimmying is caused by the pull and push in the drag link that is set up by deflection of the front springs, it is obvious that the tendency of the front wheels to wobble can be diminished by creating an extra resistance in the knuckles and lessening the friction of parts between the drag link and the steering wheel. In this case the pull and push will act on the steering wheel and not cause wobbling of the front wheels. This involves friction in the drag link and a steering gear which is not self-locking.

If wobbling of the front wheels is brought about directly by road shocks, thereby causing the shimmying, this can be remedied by bringing the point of intersection of the steering knuckle pivot with the road closer to the point where the front wheel touches the road and also by increasing the friction between steering knuckles and front axle.

H. C. OLIVIER,
Mechanical Engineer, Ryswyk, Holland.

Passenger Car Dealers Offer Means for Truck Distribution

Rural centers are small markets but aggregate is too large to neglect. Business may not warrant exclusive representation, hence selling through passenger car dealers should be considered. Merchandising methods vary greatly in different territories.

By Harry Tipper

THE difficulties inherent in the merchandising of commercial vehicles require the use of more methods of sale and distribution than are demanded in the passenger car business. No one method of distribution is suitable for all manufacturers or for the sale of commercial vehicles to all sections of the market.

One manufacturer may be able to dispose of his output entirely through branch offices because of the sizes and number of such vehicles made by him. Another manufacturer finds successful development with his business through the development of territory operated from his factory or headquarters, while a third may find it advisable to deal with retail establishments and distribute through these outlets.

Each one of these methods is limited in its application to the market, and more than one must be used to reach all the growing sections of the commercial vehicle possibilities. By far the majority of trading centers in the United States are small towns, and the majority of business concerns, large and small, are in the smaller centers. Almost half of the people of the United States live in rural communities, and if the smaller cities and towns be added, a considerable majority of the population live in these centers or the surrounding areas.

This situation is changing slowly, but the change is not sufficiently rapid to disturb the market calculations. The general use of commercial vehicles—that is, their use for all purposes outside of industrial and commercial haulage—is governed by the segregation of the population and the relation between trade center and delivery necessities. The volume of business done by the individual concern is an index only when the population factors of trading center and territory have been considered in connection therewith.

Most of the commercial vehicles in use to-day are used for light delivery purposes. This is evidenced by the fact that out of approximately 1,100,000 in use, over 600,000 are Ford trucks and about 150,000 more are commercial vehicles of the makes used for the same general purposes.

This means that out of a total usage of somewhat over a million, at least 750,000 vehicles are used for local or territorial delivery where the load is comparatively small and the dumps frequent. Of course, this does not comprehend the whole of this market, as additional requirements of local delivery are answered by the use of heavier vehicles. However, the statement will serve to illustrate the percentage of the present use of commercial vehicles required for light delivery purposes.

A good deal has been said of the market for vehicles for hauling farm products to the railroad, trading center, or market. So far, the farm use of self-propelled vehicles for this purpose has been very slight and almost negligible in proportion to the total haulage requirements on the farms of the United States.

Smaller cities, towns and villages form the trading centers for the majority of the population of the United States. In the villages and towns, the actual area of distribution from the store is relatively larger per unit of turnover than in the

larger city. The number of passenger cars per 100 people is greater. The economic value of the passenger car is relatively greater in these areas than in the larger cities or centers of population.

These same factors of population, distribution, trading area and volume, enter into the economic necessity of the commercial vehicle for local delivery purposes. The value of the motor vehicle is enhanced where the area of delivery is increased per one hundred families, and the trading radius grows larger in consequence. If the figures were accurately accumulated, it would not be surprising to find the larger portion of the 750,000 or 800,000 motor vehicles used for commercial purposes in the rural, small town and small city areas in this country.

The number of such vehicles required in any of these smaller trading centers is not large; only a few commercial vehicles would be required each year in order to supply the market. The total volume required for this section of the market each year in the United States represents,

IN this article Harry Tipper points out many of the inherent difficulties in merchandising commercial vehicles. He shows that methods must vary according to locality and offers suggestions as to procedure.

* * *

The rural territory and small cities offer a large market which cannot always be covered by exclusive representation. Mr. Tipper tells how this difficulty may be partially overcome by using passenger car dealers as a means of truck distribution.

however, a large percentage of the entire market and cannot well be neglected by the manufacturer who desires to maintain a national business.

The difficulty of the situation lies in the methods of distribution to be adopted in bringing the manufacturer's commercial vehicles into contact with this large and scattered, but productive section of the market. The passenger car has established itself in all these places. In all the trading centers there are retailers who are selling cars to the population in the surrounding areas. It is significant that the commercial vehicles sold in such areas are largely built and sold by factories making passenger cars and retailed through the same channels. Of such vehicles, coming from factories exclusively devoted to their manufacture, there is little seen either in the way of use or in the way of retail representation in these places. For most factories handling commercial vehicles exclusively, this market is as distant as a foreign country and contributes as little to his output. Nevertheless, the total sales are large and they represent a very considerable proportion of the total market.

As a natural enough matter, the manufacturer concerned only with commercial vehicles has held largely to the idea that these could be sold only by retailers giving their time and attention solely to this purpose.

Few attempts have been made to distribute from such factories to dealers handling passenger cars. Practically all passenger car factories making commercial vehicles have been successful in getting a reasonable distribution of these products through the retailing organization concerned primarily with the sale of the passenger cars.

Large Market Neglected

The sale of such vehicles is not fundamentally difficult, whether the article sold is one put out by a passenger car manufacturer or a manufacturer producing exclusively the commercial type. John Smith, who is a Sennett dealer in a town of 8000 people, has to sell the local dry goods store in the application of the Sennett truck to his business by just the same methods he would employ if he sold a truck put out by a manufacturer who did not make a passenger car at all.

The manufacturer engaged only with commercial vehicles has developed the large city and the industrial market to some extent, but the wide market in the smaller trading centers has not been developed systematically and in general these areas are supplied by commercial vehicles manufactured in factories making also passenger cars.

A good deal of discussion has arisen about the farm market for commercial vehicles. The use of this method of haulage by the farmer is increasing, although the increase is quite slow in comparison with the possibilities of such use. The development of this market depends entirely upon the convenience of retail contact in sale and service, and must be made through the existing channels of distribution quite largely because of the small volume probably in any one year in any one rural trading center.

Truck Sale Statistics

The few statistics it is possible to gather indicate:

- (1) That the majority of commercial vehicles are used for local delivery.
- (2) A majority of these vehicles are sold in the small trading centers.
- (3) They are sold and serviced mainly by retailers handling passenger cars as well.

The small town and small market depends upon this type of distribution, and it is likely that a number of the medium-sized cities can be dealt with in a similar way.

Unfortunately, the statistics do not go into sizes and

capacities in use sufficiently to indicate the limitations in the usual requirement in such places. Consequently, these conclusions are general and cannot be applied by the particular manufacturer without some further examination to determine the probable range of capacities required and the line of vehicles most likely to interest the retailer in these areas. The general statistics relating to the requirements of local delivery and the use of commercial vehicles clearly point out the proportion of the market located in and around these smaller centers and suggest the existence of an important part of the market under conditions which present the adoption of exclusive dealers for commercial motor vehicles. There is no question as to the present method of reaching this market and there is little doubt of its continued growth, or its importance in proportion to the entire market for these products.

Wide Range in Rural Hauling

In few of these places is the market confined to the use of light capacity vehicles. A proportion of the requirements demand the hauling of bulk goods where the larger capacity of haulage is of importance. The requirements of local haulage in the rural or small town trading center are more varied than the casual consideration would suggest. These variations make for the use of different types and capacities of vehicles, the light capacity vehicles predominating as they do in the larger centers.

The difficulty lies in the fact that the number required per year in any of these smaller centers is not sufficient to warrant the exclusive attention of the retailer to that business. On the other hand, few manufacturers of commercial vehicles have thoroughly attempted the distribution of their products through the existing passenger car retailers. Most of these were passenger car manufacturers first and added the other line to the passenger car business through to the local retailer.

Obviously, this method of distribution may be entirely out of line for larger cities and for particular work with industries, but for the purpose of cultivating the large proportion of the market composed of users of one or two commercial vehicles, the considerations in this article are of importance.

Potential Market in Brazil

THE sale of American-made automobiles in the Para district, Brazil, is not being pushed, and a potential field awaits some aggressive American agent or selling organization, the automotive division of the U. S. Department of Commerce is advised by Consul George H. Pickenell, located at Para.

There are no selling organizations or sub-agents which devote themselves exclusively to automotive products, he writes. Cars when displayed at all are usually shown in windows of hardware stores, surrounded by farm implements, and a general line of hardware fixtures, thus spoiling the entire beauty of the car. Most accessories are carried in these stores as a side line. Automobiles are not carried in stock by any of the selling organizations and a purchaser must await long deliveries.

Repair work, while satisfactory as to workmanship, is exceedingly slow, and an automobile owner must take his machine to various shops to get different kinds of work done. Negotiations for sub-agents or selling organizations may be taken up with the consul.

THE *Southern Ruralist* has published a booklet of interest to automotive sales managers. It contains a copy of the 1922 registration of automobiles by counties and makes for the thirteen Southern States.



PUBLISHED WEEKLY

Copyright 1922 by The Class Journal Co.

Vol. XLVII

Thursday, October 26, 1922

No. 17

THE CLASS JOURNAL COMPANY

Horace M. Swetland, President
W. I. Ralph, Vice-President E. M. Corey, Treasurer
A. B. Swetland, General Manager
David Becroft, Directing Editor

U. P. C. Building, 239 West 39th Street, New York City

BUSINESS DEPARTMENT

Harry Tipper, Manager

EDITORIAL

James Dalton, Editor
Norman G. Shidle, Managing Editor
P. M. Heldt, Engineering Editor
Herbert Chase, Engineering Editor

DETROIT OFFICE
J. Edward Schipper

WASHINGTON OFFICE
26 Jackson Place, N. W.

BRANCH OFFICES

Chicago—Mallers Bldg., 59 East Madison St., Phone Randolph 6960
Detroit—317 Fort Street, West, Phone Main 1351
Cleveland—538-540 Guardian Bldg., Phone Main 6432
Philadelphia—1420-1422 Widener Bldg., Phone Locust 5189
Boston—185 Devonshire Street, Phone Congress 4336
Indianapolis—1212 Merchants Bank Bldg., Phone Circle 8426

Cable Address Autoland, New York
Long Distance Telephone Bryant 8760, New York

United States and Mexico.....One Year, \$3.00
Extra postage west of the Mississippi River on account of Zone Post-
age Law 0.50
CanadaOne Year, 5.00
Foreign CountriesOne Year, 6.00
To Subscribers—Do not send money by ordinary mail. Remit by Draft,
Post-Office or Express Money Order or Register your letter.

Owned by United Publishers Corporation, Address 239 West 39th St., New
York; H. M. Swetland, President; Charles G. Phillips, Vice-President; A.
C. Pearson, Treasurer; Fritz J. Frank, Secretary.
Entered as second-class matter Jan. 2, 1903, at the post-office at New York,
New York, under the Act of March 3, 1879.

Member of Associated Business Papers, Inc.
Member of the Audit Bureau of Circulations.
Automotive Industries—The Automobile is a consolidation of The Auto-
mobile (monthly) and the Motor Review (weekly), May, 1902, Dealer and
Repairman (monthly), October, 1903, and the Automobile Magazine (monthly)
July, 1907.

Unsound Business Practice

ELSEWHERE in this issue P. L. Palmerton points out a pretty moral when he speaks of tire sales in Belgium being dependent on discounts to chauffeurs. This practice which started in a small way has grown so strong that it is the principal factor in tire sales. Like all evil practices, no one ever expected it to assume the proportions that it since has, but now that it exists it is well-nigh impossible to break.

We in this country escape from such a contingency by virtue of the fact that the preponderance of cars are owner driven.

But we cannot pat ourselves on the back too much. Is not the practice of over-allowances for trade-ins on used cars similar in principle to the chauffeur evil in the Belgian tire market? Here, again, an unsound business practice has become common because of

the desire for immediate sales and consequent hardship is suffered.

Quality is one of the foundations upon which the permanent success of a concern is established. The quality appeal in tire selling is lost through giving discounts to chauffeurs. That same appeal is swept away in selling motor vehicles by the practice of buying used cars from the prospect. Its loss means more sand and less concrete in the foundation of the manufacturer's organization.

Unsound business practice as a temporary expedient is apt to act like the proverbial rolling snowball; it gains weight and becomes unmanageable.

Four Cylinder V Engines

ONE of the most radical departures in automobile design made in recent years is found in the Lancia car described in our issue of Oct. 12. This new model evidently represents an attempt to reduce the weight of a car of given capacity and ability and to bring down the cost of manufacture. The small angled V type of construction was introduced by Lancia some years ago in connection with eight-cylinder engines, where it has the advantages of greatly reducing the unbalanced forces in a horizontal plane and of permitting of the use of a narrower and more slightly engine bonnet. What is gained by substituting this construction for the conventional type of four-cylinder engine is not so apparent, however. By departing from the usual form of four-throw crankshaft, equality in the intervals between explosions is maintained, but the cost of crankshaft manufacture is evidently increased, for the crankpin axes are no longer all in one plane and the long crank arms, instead of being straight bars of rectangular or other simple section, have to be made of the arched form characteristic of six-cylinder crankshafts.

While regularity of explosion sequence is maintained, the conditions of running balance are undoubtedly somewhat impaired. In the first place, the unbalanced forces are no longer confined to the vertical plane but contain a variable horizontal component as well, and the maximum value of the total unbalanced force is about 18 per cent greater than in a similar vertical engine. Owing to the materially different character of the unbalanced forces—a plain reciprocating force in the first case and a variable rocking force in the second—it is hard to say exactly how the amplitudes of vibration would compare, but it is a fairly safe assumption that the car with the V engine would vibrate perceptibly more.

The engine is very slightly shorter than the ordinary four-cylinder engine of the same displacement, but this shortening is effected by cutting down the length of the center bearing as well as that of the crankpin bearings. The over-all length of the engine could have been further reduced by using a two-bearing crankshaft, but apparently Lancia has no faith in that type of shaft.

One advantage of the construction resides in the fact that the rows of valves in the head are somewhat

farther apart than in a vertical valve-in-head engine, and the rocker arms therefore come longer, and, in consequence, exert less side pressure on the valve stems and their guides.

Perhaps the most interesting aspect of the new design is that it adds one more to the growing list of post-war European aluminum engines, which now include the Hispano-Suiza, Napier, Szawe and Austro-Daimler. In the earlier attempts to use aluminum cylinder castings a great deal of trouble was encountered due to the fact that the cylinders would distort when subjected to working temperatures, but it has since been found that if the blocks are previously annealed at a higher than their working temperatures they will not lose their shape in service.

All-Steel Bodies and "Frameless" Chassis

UNDoubtedly the most interesting engineering feature of the recent Paris automobile show was the new and so-called "frameless" Lancia chassis, described fully in these columns under date of Oct. 12. In this vehicle the body forms the chassis frame and is the only structural member connecting the front and rear axles. The conception is a radical departure from conventional practice, but is worthy of careful study for two primary reasons:

1—It eliminates a heavy structural element, which has come to be looked upon as a necessary part of every car, and therefore should result in a considerable saving in weight.

2—It makes the car a substantially all-metal product which, it would appear, will greatly facilitate production and enable the use of a durable baked enamel finish such as cannot be applied to wood on account of the high baking temperatures required.

Some of the other features of the car in question, such as the novel type of front spring and axle and the V-type four-cylinder engine, while they are interesting in themselves, do not appear to be required to realize the advantages of a construction combining body and frame. In other words it would seem to be possible to realize the advantages inherent in the body and still utilize a conventional front axle and spring, and an ordinary type of engine.

It may be contended that the saving in weight is more apparent than real, since it will evidently be necessary to use a heavier sheet metal for the body and frame combined in one unit than is required for covering the body when the latter is made independent of the frame. On the other hand the vertical section used in the new Lancia is much deeper than any ordinary frame, so that the pressed metal employed can still be light if provision against buckling is made. Beside this the weight of wood ordinarily used would be eliminated, except perhaps that in floor boards and whatever wooden frames for upholstery and seats are employed.

It is interesting to note that the 122-in. wheelbase

Lancia with a four-passenger phaeton body and full equipment is reported to weigh only 1650 lb. The track is only 43 in. but the engine has 122 cu. in. displacement, which is not small according to European standards. The car is said to be capable of making 70 m.p.h. and is not one of the diminutive types of automobile which are becoming more popular in Europe.

Just how a car of this general type will perform over rough roads such as are frequently encountered in this country is a matter for speculation. Comparative costs will undoubtedly be a determining factor, once ability to stand up under rough usage is demonstrated. Some satisfactory means for applying the upholstery would have to be worked out, if this has not already been done. Changes in body lines would be expensive, once dies are made for a given type. The matter of applying various upper structures to give the usual number of body models will require much study.

These are some of the problems whose solution must be sought before a radical departure, such as the Lancia design involves, can be considered by American builders. Nevertheless, the possibilities of such a design should not be overlooked.

How Much Does a Car Sale Cost?

DEALERS in every line of merchandise are demanding longer discounts. In some lines where 25 per cent was satisfactory ten years ago, dealers are demanding and getting 50 and 60 per cent. The difference is being passed on to the public. Automobile dealers are among those demanding larger discounts. But car and truck manufacturers know that there is a definite limit to what can be passed on to the public. They know that permanent progress depends upon reducing the cost to the public, rather than in increasing it.

Dealers may be able to prove, however, in many cases that they are not making reasonable profits on the present basis, and they will be honest in their statements.

The answer to the difficulty lies in a reduction of marketing costs, rather than in a shifting of discount percentages or an increase in price. Few companies would attempt to operate their factories to-day with as little detailed knowledge of unit costs as they have in connection with their sales. Total sales figures are no more useful in determining where costs can be cut than are total production cost figures in seeking production wastes and inefficiencies.

Cost accounting in regard to sales must be improved until it resembles in accuracy the picture of factory methods given by modern production cost figures. Unit sales costs must be determined. Total marketing costs must be split up into their integral parts and the resulting figures studied carefully if any real progress is to be made in reducing merchandising costs. Efforts along this line are essential to future progress.

Shipping Facilities Retarding Deliveries

Dealers Get Some Shipments Through Driveaways—Pro- duction Keeps Up

NEW YORK, Oct. 23—October production is holding up remarkably well despite the difficulty experienced in getting through materials. Shipping conditions have shown little improvement in the last week, nor is any expected until the needs of the farmers in moving crops and the demands of lake ports for coal have been relieved. Detroit has met the situation through the greater employment of motor trucks to bring steel from Pittsburgh, so that up to this time there has been no curtailment of operations from this cause.

Reports for the first week of October show only a slight falling off from the output of the last two weeks in September. That this condition exists is only a little less surprising than the fact that the usual seasonal decline has not yet struck the industry and it is doubtful if it will be apparent to any degree this year. New models and a stimulated interest in closed cars have kept up buying to an almost unprecedented level.

May Equal September

Indications point to the possibility that the month will develop a total production equal to September, when the output aggregated 206,000 cars and trucks, and that it will show a gain over last October when 147,000 were produced. Such curtailment in operations as may come in some plants between now and the end of the month probably will be more than offset by the increased production of the Ford plants.

Automobile dealers are now being hampered through the lack of adequate shipping facilities. With the growing shortage of available freight cars, driveways are being resorted to by most manufacturers, and as long as good weather prevails dealers can get some of the cars in this way.

Conditions through the country as they bear on the automotive industry are generally encouraging. Particularly good are the reports coming from the South and Southeast, where it is predicted that, with the improvement among the farmers, a normal volume of automotive business will be established by next spring.

With truck manufacturers there has been a steady advance. While the tractor branch of the industry has taken no decided spurt it has shown

Business in Brief

NEW YORK, Oct. 25—Industry is active. There is comparatively little non-employment, and the general situation is described as the best in a year and a half. Cooler weather is given the credit for this, especially in the retail and jobbing trades. Prices are holding up well, and while the car shortage is felt, still business is generally good. The pinch is on movements of crops, coal and lumber.

Car loadings for the week were 968,169, which was 20,212 fewer than in the preceding week but 68,488 over 1921. Merchandise and miscellaneous products suffered most, while grain and forest products slumped some; other loadings showed an increase.

There was an easing of prices of pig iron, steel and industrial coal and copper, too, dropped a bit. Steel buying, while fairly good, was not so active, and production has suffered because of delays in arrivals of raw materials and with the shipment of finished products.

Soft coal production is running along at a uniform pace, the returns for the week ending Oct. 17 showing about 9,900,000 tons, which is about the average of the last five weeks. Anthracite production is increasing slightly, the outlook being for about 2,000,000 for the week, which may be compared with 1,959,000 tons the preceding week and 1,843,000 in the like week a year ago.

Textiles have been active, and jobbers are buying more freely, which shows depleted stocks and heavier distribution. There seems to be a better feeling in the wool trade, with foreign markets firm.

Profit sharing and bear pressure caused sharp reactions in the stock market and stocks were lower, with bonds irregular. Liberty 3½s were at a new high, and money and sterling ruled firmer.

Bank clearings showed a gain of 41.2 per cent, the aggregate being \$8,915,082,000. Compared with the same week a year ago, there was a gain of 28.5 per cent.

marked improvement. The majority of tractor manufacturers have made headway in clearing their floors of finished stocks.

Parts makers are in a thriving condition, with their financial foundation never sounder than it is now. Collections are good and orders on hand call for the maintenance of production at a peak rate.

Mengel Co. to Build Bodies for Durant

Output of New Louisville Com- pany Will Be 30,000 Dur- ing First Year

LOUISVILLE, KY., Oct. 23—A \$600,000 automobile body manufacturing concern, with the Mengel Co. as the principal stockholder, will begin operations here early in 1923, F. B. Ayres, manager of the Louisville Industrial Foundation, announced last night.

It is understood that Durant interests are responsible for the formation of this new company, which will be only one of a half dozen body building concerns that will work on the 300,000 bodies which Durant will require in his operations during the next year.

The new company, known as the Mengel Body Co., will occupy a 30-acre site at Fourth and G Streets. Buildings will be erected south of the Southern Railway and will have track connections with the Louisville & Nashville Railroad. Construction will be started at once.

Plans are being made to manufacture 30,000 bodies during the first year and to give employment to 500 men. A five-year contract, totaling \$20,000,000, has been obtained, it was announced. It is understood that this is a Durant contract.

Capital May Be Increased

The new company will be incorporated under the laws of New Jersey, and the initial capital is expected to be increased soon.

Plans for the new company were agreed on by R. Frank Monroe of Ludington, Mich., an expert automobile body builder, who has been associated with Durant in such work, W. C. Durant, William L. Hoge and Arthur D. Allen of the Mengel company. Allen will be president of the company, and Monroe and Hoge, vice-presidents. Monroe soon will remove to Louisville.

The new plant will manufacture bodies for light trucks, park and station wagons and regular chassis, especially those used for delivery purposes. The plant will consist of woodworking shops, dry kilns and assembling, painting and finishing departments, containing 200,000 sq. ft. of floor space. It will be so arranged that additional units may be added.

Plant in Kalamazoo

KALAMAZOO, Oct. 24—A new body plant to operate in connection with Durant Motors, Inc., the concern to be headed by H. Jay Hayes, of Detroit, with Victor Preston, of Grand Rapids, as engineer, is announced. Information concerning the new concern was first given out at a banquet tendered foremen of the Hayes-Ionia Automobile Body Co., at Ionia. It is reported the organization is to be perfected immediately.

Grant Stockholders Fail to Heed Appeal

Lack of Capital Results in Receivership—Plant to Continue Operations

CLEVELAND, Oct. 14—Joseph C. Hostetler, lawyer and member of the law firm headed by former Secretary of War Newton D. Baker, was to-day appointed receiver for the Grant Motor Car Co. His bond is \$50,000.

Creditors of the corporation are asked in the bill of complaint to send in their claims. The plant will be closed for a short time for inventory, but the receiver has authority to operate the plant and this will be done, with the view to working out the company's salvation under the protection of the United States District Court. This has proved a great help to the Standard Parts Co., which has been in the hands of receiver Frank Scott for two years.

Plant Not Levied On

The appointment of the receiver was made by Federal Judge D. C. Westenhaver on the application of the Durston Gear Corp. of Syracuse, N. Y., which says that it obtained a judgment against Grant in the local common pleas court for \$13,620. The company states that it has not levied on the plant of Grant for the reason that such action would precipitate a judicial sale and cause the assets to be placed on the auction block to the detriment of both creditors and stockholders.

The gear company states in its application that the \$3,250,000 of authorized common stock of the company is all outstanding; that of the \$1,250,000 of authorized 7 per cent cumulative preferred stock, \$1,035,000 is outstanding and that the company's principal assets consist of land, buildings, machinery and stock.

It also states that the company owes to creditors \$167,000 on open accounts; to merchandise creditors on notes, \$232,000; to banks on notes, \$638,000; to various holders of long term notes, \$500,000, and to stockholders on notes, \$41,000. Most of these obligations are past due, while the company cannot realize at once on its principal assets in order to pay the obligations. There was not sufficient money on hand to meet current expenses.

Unable to Get Working Capital

Other creditors in addition to the gear company have filed suits against the Grant company, alleging that, unless a receiver was appointed, they would join in action that would embarrass the company to an even greater extent.

The Grant company plant is at Coit road in this city, and its real trouble this year has been its inability to take advantage of the prosperous times that has come to the automobile industry in general by its failure to get sufficient working capital for current operating expenses.

"Sport" Name Given to Models Brings Back Unpleasant Inference That Car Is Pleasure Vehicle

By C. D. HASTINGS,
President, Hupp Motor Car Corp.

Detroit, Oct. 25.

USE of the name "sport car" to describe a specially equipped open model is not consistent with the policy of the industry in recent years to establish itself as a stable, conservative industry with a definite and important place in American business. For years now the industry has striven to overcome the early designation of pleasure vehicles, and now that this term has been practically superseded by passenger car, the name sport car has been devised injecting possibilities of many undesirable complications.

The industry has taken the position that all of its products are of major importance in the business and social life of America. There can be no question but that this is so. Unquestionably there will be fads from time to time which the industry must meet, but production schedules or earning capacities of factories will never be built upon fads. Where it is a question of meeting a temporary demand with specially designed and equipped vehicles, the industry should exercise a great deal of caution in the selection of its names.

Use of the term "artificial leather" to describe a specially perfected fabric which had an unquestioned place in the manufacture of cars has done much to destroy the possibilities of this fabric. As a substitute for leather it gives splendid service, in many cases better than leather, but the title "artificial" has made it unpopular in the buying public's mind. Had this fabric been established under a special name and this name used exclusively there would have been no instinctive feeling against it.

Nickel trimmings on cars have not worked out satisfactorily in the experience of the industry and there is no indication that it will work out more satisfactorily now. Minute imperfections in the metal or lack of care in handling before undergoing the nickeling process means a short life for the plating and owners whose cars chip or turn yellow will not be satisfied owners or future buyers of cars of that make. With the extreme care necessary in turning out cars of this type the production possibilities of factories must necessarily be curtailed.

Anything that does not make for utility in an automobile cannot be long lived. The trend toward utility in cars cannot escape the attention of the manufacturer, and the manufacturer who makes cars according to the greatest utility and service will lead the field. Where utility is considered nickel plating, drum type lights and other features of present day cars cannot endure. Everyone knows that much superfluous metal is used in the manufacture of drum type headlights. In the centering upon the development of cars to their greatest utility value all such superfluous metal and equipment must go.

Recently the company made an appeal to stockholders to help out by subscribing for more stock, but that appeal fell on deaf ears. Efforts have been made in other quarters to raise cash for working capital, but these failed.

Monroe May Consolidate with Louisville Company

LOUISVILLE, KY., Oct. 23—The Monroe Motor Co. of Indianapolis, which recently was reorganized after defending a receivership suit, is negotiating through Attorney Warren T. Godfroy here to consolidate with a Louisville manufacturing concern and move to Louisville. Neither the Fletcher-American National Bank of Indianapolis, which has a controlling interest in the property, nor Godfroy, would reveal the identity of the company here.

The Monroe company owns no property in Indianapolis, but leases its buildings. According to Godfroy's information, it has \$750,000 quick assets and no indebtedness. Godfroy said that he visited the plant and that it is turning out three cars a day.

Climax Rubber Acquires Factory of Rotary Tire

COLUMBUS, Oct. 23—The Climax Rubber Co. of Columbus, which has been operating plants at Columbus and Delaware has taken over the plant of the defunct Rotary Tire Co. The deal was made by I. S. Hoffmann, president of the Climax company, with the Franklin Mortgage Co. of Columbus, which concern took over the property from I. R. Winegarner, the receiver. The deal is in the form of a lease with the privilege of purchase after certain litigation now pending is settled.

The Climax Rubber Co. has started operations. The equipment is sufficient for the manufacture of 500 casings and 500 tubes daily, and it is planned to get under full production soon. The plant is one of the best equipped in the State, among the smaller ones, and has a floor space of 50,000 sq. ft. It is planned to make compression tubes.

When the company was forced into the hands of the receiver about a year ago, the Franklin Mortgage Co. held a mortgage for \$38,000. This concern advanced \$20,000 more in cash.

Engineers to Drive Competitor's Cars

Chandler Vice-President Starts Move at Meeting of S. A. E. in Cleveland

CLEVELAND, Oct. 24—Cleveland automotive engineers for a period are going to drive their competitors' cars. The engineer of the Chandler Motor Car Co. will drive the car owned by the engineer for the Peerless Motor Car Co., and the Chandler engineer will lend his car to the Peerless engineer.

George M. Graham, vice-president of the Chandler company, started the swapping-of-cars idea when he addressed the Cleveland section of the S. A. E. He told the members that by driving a competitor's car for a day or two the engineer would learn of the latest developments in other cars, that he could talk more intelligently to his own organization and would broaden his vision.

Engineers Adopt Idea

Engineers in the audience fell in with the idea so well that they adopted it, and several volunteered to lend their cars on an exchange basis.

More and more as the industry grows, the automotive engineer should know of other makes, Graham said. The engineer is a bit of recluse and must have time to himself to think, plan and devise and then to check up, and he can obtain many excellent ideas from other cars and, in instances, save himself much time.

Another suggestion was that the engineers should come together often, as Graham also favored more frequent meetings of engineer and salesman. The engineer who acquires more of the viewpoint of the salesman, and the salesman who takes on some of the mechanical knowledge of the engineer will prove to be of greatest value in the industry, Graham said.

Research Work Important

The third suggestion, directed to the manufacturer, was that the importance of the research work of the engineer may not have been given the importance in the financial budget to which it is entitled. It is easy to get an appropriation to place more salesmen on the road and to extend the advertising campaign, he said, but it is difficult in too many cases to get the proper amount of money needed for engineering work that may never pan out in the production schedule.

The engineer was advised to keep close to the service department of the factory, where the latest information from the file may be obtained. Graham said that the service stations of the dealers and distributors also are a source of valuable information, inasmuch as there the engineer may get the customers' viewpoint. The service stations are the eyes and ears of the industry, and the engineer who is not in close contact with these

CITROEN WILL SEND CARAVAN TO SAHARA

NEW YORK, Oct. 23—Approved by the French government, which will send official observers, an automobile caravan is being organized by Andre Citroen, French automobile manufacturer, for an exploration of the Sahara desert, according to a copyrighted cablegram to the New York Tribune.

Citroen has built the cars which really are moving fortresses, being armored and equipped with the caterpillar tread as were the tanks in the war. This protection is necessary because of the bandits who infest the desert. The expedition, which will start about Dec. 1, will be divided into three sections. The first will carry machine guns, mounted in armored cars, the second, the food supply, sufficient for a year, and the third, gasoline, water and spare parts.

The desert trip will be through country unknown to white men. It is believed it will produce scientific results of interest and is hoped by the scientists who will be in the party to make possible the discovery of ruins of prehistoric cities.

departments is overlooking something.

The manner in which the distribution of automobiles has been made is a greater achievement than the fact that so many have been sold and are in operation, Graham told the engineers. One-third have gone into the homes of farmers and two-thirds into homes where the annual income is \$4,000 and less.

Seventy-two per cent of the automobiles in use have gone to cities of a population of 50,000 and less.

Kettering Addresses Society

CHICAGO, Oct. 23—C. F. Kettering was the speaker at the meeting of the Mid-West Section of the S. A. E. on Friday night. His speech was devoted to analyzing the fundamentals of engineering.

Chicago Meeting Jan. 31

NEW YORK, Oct. 23—The Chicago meeting and dinner of the Society of Automotive Engineers will be held at the Congress Hotel Jan. 31, 1923.

REPUBLIC TRUCK PLANS

NEW YORK, Oct. 23—The working out of plans for removing the Republic Motor Truck Corp. from receivership has reached that stage where the bankers are waiting for the auditor's report and appraisal of the company's property. Upon receipt of this report, which is expected about Nov. 1, a general creditors meeting will be called for consideration of the completed re-organization plan.

Durant Will Erect Another Star Plant

To Be Located at Flint and Have Production Capacity of 8000 Cars Monthly

NEW YORK, Oct. 24—W. C. Durant has ordered the construction of a fifth factory for the manufacture of Star cars. It will be located at Flint, will have a capacity of 8000 cars a month and will employ 4000 men.

It is to be a million dollar plant and will be a duplicate of the one now in course of construction for the manufacture of the Flint car. It will afford 51,640 sq. ft. of floor space and be of concrete and steel construction, brick faced. The contractor has agreed to have the plant completed by May 23. The main assembly plant will be three stories in height, 80 x 900. There will be three wings, two of them three stories, 80 x 400, and the third one story, 257 x 400.

The revised Durant schedule calls for the production of 281,000 Star cars between now and Dec. 31, 1924. Between Jan. 1, 1923, and Jan. 1, 1924, 86,000 will be made at Lansing, 50,000 at Flint, 53,650 at Elizabeth, 43,000 in California and 32,250 at Leaside, the Canadian plant. It is expected that the four plants now in operation will produce 16,000 cars before the first of the year. Up to the present about 4000 have been built.

Contract Between Driggs and Diamond Cab Voided

NEW YORK, Oct. 23—Deciding to do the marketing of its product itself, the Driggs Ordnance & Manufacturing Corp. announces the annulment of its contract with the Diamond Taxicab Co. which called for the manufacture of taxicabs to equip the fleets to be put out by the Diamond company. This has resulted in the formation of the Driggs Taxicab Corp. which will manufacture taxicabs in the plant of the Driggs Ordnance corporation at New Haven. It is planned to turn out 1000 cabs the first year.

A selling organization is being perfected to handle this product. It will be known as the Driggs Taxicab Sales Co., with E. E. Garrison in charge of sales. Its headquarters will be in New York, probably at 19 West 44th Street, the present location of the Driggs Ordnance & Manufacturing Corp.

The Driggs taxicab will sell at \$1,950 f.o.b. New York, and the selling plan will be based on time payments to the drivers direct.

HENDEE MAY EXCEED 1920

SPRINGFIELD, MASS., Oct. 24—Sales of the 1923 Indian models are so satisfactory as to indicate that the Hendee Manufacturing Co. will do a business this year exceeding the high mark reached in 1920. A single day's sales totalling 309 cycles, Oct. 19, are reported as the best record for a year and a half.

Thropp Patent Suit Won by Seiberling

Decision of Lower Court Is Reversed and Infringement Claims Are Upheld

AKRON, Oct. 21—F. A. Seiberling, president of the Seiberling Rubber Co., operating plants at Barberton, Ohio, and New Castle, Pa., has won a notable victory in the United States District Court of Appeals, third circuit, at Philadelphia, in his patent infringement suit against the John A. Thropp & Sons Co. of Trenton, N. J., according to word received here to-day, the court of appeals reversing the trial court's decision and handing down a decision in Seiberling's favor.

It is expected that the case will be carried at once to the United States Supreme Court for final adjudication.

The final outcome of the Seiberling suit closely concerns the tire industry, as the John A. Thropp & Sons Co. is one of the largest manufacturers of tire building machinery and is supplying such equipment for more than 60 tire factories in the United States.

Covers Tire Building Machines

The Seiberling suits charged infringement of two of Seiberling's tire building machinery patents which he invented and used at the Goodyear plant in Akron, the litigation specifically involving spinning rolls and high speed cores used on machines spinning the cotton fabric into the tire carcass.

Prior to the final argument of the case before the trial court, the United States District Court of New Jersey last February, Seiberling withdrew his infringement claim on his first patent and filed a disclaimer which sought to read into the latter patent a particular process of tire building. The district court in its decision ruled that the patent infringement claim as modified by the disclaimer was invalid, on the ground that the process or method specified was nothing more than had formerly been followed by hand in tire construction.

The court of appeals, however, in its decision reverses the trial court and validates Seiberling's claim of a patent infringement.

The outcome of this case has also an important bearing on a similar suit filed some time ago by Seiberling against the Firestone Tire & Rubber Co. of Akron, and in which case the Firestone company received the verdict in the United States district court of appeals at Cincinnati a year and a half ago. This case is now pending on appeal.

1923 OAKLAND PRODUCTION

DETROIT, Oct. 23—Thirty per cent of Oakland production in 1923 will be closed cars, according to C. J. Nephler, general sales manager. September was the company's biggest month this year,

STATION WAGON, CAR FOR TAXING PURPOSE

NEW YORK, Oct. 23—Affirming a decision recently made by Justice Norman S. Dike in the case of George G. Zabriskie against Walter W. Law, Jr., president of the State Tax Commission, the Appellate Division holds that the common type of automobile known as the suburban or station wagon is not a commercial truck but a passenger car, and as such is entitled to the lower license rate collected by the Automobile Bureau.

Judge Dike's decision held that station wagons were subject to the personal use of their owners only and were not used for the transportation of passengers or freight for pay, hence were not commercial vehicles.

due to the introduction of its new models, and October production will run higher. The company reports its sport car and two passenger coupé oversold. The sedan and five passenger coupé now are in full production. Full working time is assured for the winter months, he said.

W. R. Tracy, assistant sales manager, back from a trip through the Middle West, reports business in industrial centers holding up in good shape, but that farmer buying is considerably below normal.

Fuller Extends Gearsets to Passenger Car Lines

KALAMAZOO, Oct. 24—Fuller & Sons Manufacturing Co. has extended its output of gearsets to include types for both trucks and passenger cars. Among orders for passenger car equipment that have been received is one from the Maxwell Motor Corp. for 50 transmissions daily for use in the new model of Chalmers automobiles, and another given by the Barley Motor Car Co.

"Our production schedule for next week calls for over 1000 transmissions," president Frank D. Fuller says. "We expect to run steadily through the winter months and I look for a record breaking business all next year. For the ensuing week our payroll shows 326 people employed. We should be able to maintain that quota and probably increase it."

ELECTED TO ELECTRIC BODY

CLEVELAND, Oct. 23—The Philadelphia Storage Battery Co. and the Vesta Battery Corp. have become members of the Automotive Electric Association.

Philadelphia will be represented in the association by James M. Skinner, vice-president, and W. S. Cranmer, sales manager. Vesta will be represented by F. S. Armstrong, secretary and sales manager. The storage battery division of this association is making a careful study of battery distribution and service.

Rushmore's Patent Awarded Priority

Washington Hands Down Decision in Suit Covering Steam Cooling System

WASHINGTON, Oct. 23—The United States Patent Office has handed down a decision in the interference suit of Wellington W. Muir of the Harrison Radiator Corp. vs. Samuel W. Rushmore of the Rushmore Laboratory of Plainfield, N. J., awarding to Rushmore priority of invention for a steam cooling system for internal combustion engines on motor vehicles.

According to the testimony Rushmore filed his application March 21, 1921, and Muir's application was recorded Oct. 10, 1921. Rushmore, who is a former manufacturer of automobile headlights and of an electric starting and lighting system, offered in the way of testimony in the suit a copy of AUTOMOTIVE INDUSTRIES of May 26, 1921, which contained an article written by P. M. Heldt which described Rushmore's invention. The Patent Office in its decision stated that President Harrison of the Harrison Radiator Corp. had admitted he knew of Rushmore's work "in all probability" promptly after the issue of AUTOMOTIVE INDUSTRIES of May 26, 1921.

Rushmore System Intermediary

The Rushmore cooling system is in a way intermediary between the air cooling and the ordinary water cooling system. Water is used as the cooling medium, but the jacket outlet temperature is constantly maintained near the boiling point of water. Ordinarily there is little or no water in the radiator above the bottom tank. The radiator core is filled with steam to a certain height, depending upon the relation between heat absorption in the cylinder jackets and heat dispersal per unit of core surface of the radiator.

Temco Awarded Damages in Shock Absorber Suit

COLUMBUS, Oct. 23—The United States Circuit Court of Appeals has handed down a decision awarding the Temco Electric Motor Co. damages in its suit against the K. W. Ignition Co. of Cleveland, for infringement of the Thompson patent relating to shock absorbers for Ford automobiles. The case had been appealed from the District Court of the United States for the Northern District of Ohio, whose decision was reversed.

The decision carried with it a recovery of nearly \$300,000, said to be one of the largest in a patent suit of this sort which has ever been secured. It is stated that 25 or 30 other concerns are also involved in this decision, and that some of them already have settled without court action.

Time Near to Build Tire Reserve Supply

**Needed to Meet Spring Demands
—Goodyear Plant Executives
Hear of Prospects**

AKRON, Oct. 5—Plant executives of the Goodyear Tire & Rubber Co. from Connecticut, Canada and California, in conference here this week, were unanimous in expressing the conviction that the tire industry to-day was on the most stable basis it had known in years, and that the outlook for the future was increasingly bright, with prospects for an unprecedented sale of tires early next year.

With automobile dealers expecting the greatest era of automobile buying within the next twelve months that the automotive industry has ever experienced, tire manufacturers will have to begin shortly to build up finished goods inventories in order to have sufficient reserve supplies on hand to meet emergency demands in the spring. The buying peak in automobiles is expected to be between March and June of next year.

Goodyear officials say the low mark of production in tires will be reached before Nov. 1 and that production will then curve upward again and continue on an upward curve as manufacturers prepare for the spring business. Goodyear now is on a basis of more than 20,000 tires a day.

Attending the three day conference were Harry Blythe, superintendent, and C. C. Slusser, general manager of the Goodyear tire plant at Los Angeles; E. H. Koken, superintendent of the Goodyear tire plant at Toronto; and A. M. Hardy, A. D. Wheeler and A. J. Smith of the Goodyear mechanical goods and solid tire plant at Bowmanville, Canada; S. A. Steere, superintendent of the Goodyear cotton mills in California, and C. W. Young, superintendent of the Goodyear cotton mills at Killingly, Conn.

Vice-president and Factory Manager Paul W. Litchfield presided at the sessions.

Dunlop Refits Factory It Bought Near Paris

PARIS, Oct. 4 (by mail)—Dunlop this week inaugurated his new 250 acre tire factory at Montluçon (Allier). Built during the war by the French Government for shell production, this factory was purchased by the French Dunlop Tire Co. soon after the armistice and has been fitted up in the most modern manner. It will replace the factory at Argenteuil, near Paris, which had become too small for modern requirements.

The new Dunlop factory gives employment to 5000 work-people. Placed almost in the center of France, it is conveniently situated for railroad transportation and is by the side of the Berry canal. There are 12 miles of normal gage rail-

9 MONTHS' OUTPUT PUT AT 1,875,227

WASHINGTON, Oct. 25—Figures received by the Department of Commerce through the Bureau of the Census places total production of passenger cars in September at 186,562, compared with 249,225 in August, and of motor trucks at 18,843 as against 24,200 in August. While the September production is the lowest since March, it is considerably above the figures for September, 1921, when 144,669 passenger cars and 13,648 motor trucks were produced.

The following table gives the total output for each of the last nine months. With a few exceptions, the each month are from identical firms and include approximately 90 passenger car and 80 motor truck manufacturers. September figures are subject to slight revision when all reports have been received.

1922	Passenger cars	Trucks	Total
Jan.	81,693	9,416	91,109
Feb.	109,171	13,195	122,366
March ...	152,959	19,761	172,720
April	197,216	22,342	219,558
May	232,431	23,788	256,219
June	263,027	25,984	289,011
July	224,057	21,357	245,414
Aug.	249,225	24,200	273,425
Sept.	186,562	18,843	205,405
	1,696,341	178,886	1,875,227

road tracks within the works and 40 miles of narrow gage line. The factory has attached to it a garden city with houses for 700 families.

To celebrate the completion of this factory, which is stated to be the most modern of its kind in Europe, the Dunlop company ran a special train with saloon and dining cars from Paris to Montluçon for the convenience of its guests.

INLAND RUBBER ELECTION

CHICAGO, Oct. 23—At the annual meeting of the stockholders of the Inland Rubber Co. the following officers and directors were elected: E. B. McKay, president and general manager; M. J. Flynn, treasurer, and F. L. Ayer, secretary. The directors elected are E. B. McKay, M. J. Flynn, F. L. Ayer, Adolf Kuecken and A. Colnon.

THOMAS H. GLENN DIES

BOSTON, Oct. 25—Word has been received here of the death at Dunkirk, N. Y., of Thomas H. Glenn, the first manager of the New England branch of the Firestone Tire & Rubber Co. at Boston. He was one of the pioneers in the tire field, and after working for the Firestone in its early days at New York was transferred to Boston.

Distributors Order 300 Federal Trucks

**Annual Sales Meeting Held—
Plant Operations Exceed 50
Per Cent Capacity**

DETROIT, Oct. 23—Federal Motor Truck Co. received orders from distributors at its annual sales convention this week in excess of 300 for immediate delivery and looks for a steady stream of business through the winter months. The factory now is operating at better than 50 per cent of its normal capacity and is rapidly getting into production on its new light models. Buying from the farm districts is light, but is improving.

M. L. Pulcher, vice-president and general manager of Federal, predicted that the next five years will be the most prosperous era the truck business has known. Dealers who have been through the depression of the past two years are about to cash in, Pulcher said, and will do so because of the present disorganized railway transportation system of the country.

F. L. Pierce, general sales manager, pointed out to the convention the strength of the Federal sales organization, declaring that in addition to the 75 distributors present, it had 600 dealers. L. B. Dudley, advertising manager, outlined the company's advertising program, and R. H. Crooker, sales promotion manager, told of plans to aid dealers.

The convention closed with a dinner at the Detroit Athletic Club, at which F. W. Fenn, chairman of the motor truck committee of the N. A. C. C. spoke, in addition to company officers. An inspection trip to the Muskegon plant of the Continental Motors Corp. followed the dinner.

Nash Turning Out 75 Cars Daily at Milwaukee Plant

MILWAUKEE, Oct. 23—Operating at capacity and with night shifts, the Milwaukee plant of Nash Motors is turning out 75 cars a day, employing more than 1000 men. By March 1, when the addition to the local plant will be completed, this output will be increased to 125 cars a day. Lack of bodies also has limited production, although the Seaman Body Corp. has doubled the capacity of its plant.

To accommodate the large number of workmen employed by the Nash company, and men engaged (in building the new LaFayette works adjoining this plant, as well as further extensions of the Nash factory, the Milwaukee Electric Railway & Light Co. has installed four large passenger buses to operate between the end of its city line and the Nash-Lafayette works. Passengers pay the regular city fare of 7 cents and have the usual transfer privileges.

Milwaukee Schedules Reach Steady Level

Improvement Seen Especially in Motor Truck and Passenger Bus Field

MILWAUKEE, Oct. 23—Production schedules in practically all branches of the automotive industry have settled down to an even pace on the basis of contracts that will probably cause no marked variation in volume until the holiday vacations. So far as passenger car builders are concerned, they are operating as well as the September average, and orders from distributors and dealers are absorbing output steadily, while on closed types factories are still far behind and see little hope of catching up with deliveries until the end of the year.

Motor truck manufacturers are finding a steadily improving market, both for freight carriers and passenger vehicles of the motor-bus type. The latter has come to be a distinct feature of business. The call for freight trucks covers the general range, with the $\frac{3}{4}$ to 1-ton and the 3 to 3½-ton vehicle moving probably best at this time.

Activity in Engine Shops

Engine shops are very busy, and operations are at least as good, if not somewhat heavier, than the summer average, due to good orders for current as well as future delivery. Heavy duty engines for trucks are in better request than at any time this year. It is apparent that the motor truck trade is laying foundations for increased production in anticipation of a much better market, as the business of this country comes to a more complete realization of the critical situation of railroad transportation, especially when winter makes the present serious condition far worse.

Makers of automotive equipment, both for the manufacturing trade and the interests catering to individual owners, report business very satisfactory and look for the most active winter production season since 1919, or even an increase of activity. Shipping directions from manufacturers and jobbers are coming freely, and so far there is little or no accumulation for stock in warehouses, although usually at this time plants were beginning to lay up surplus for the spring rush.

The railroad freight situation is more unfavorable than before, but motor transport facilities are being put to good use, especially on short hauls. This method is coming into greater use, regardless of the railroad situation.

WHITE CO. AT CAPACITY

CLEVELAND, Oct. 24—Production by the White Co. has been steadily increased until its plants are now operating at their capacity of 10,000 trucks annually. The company reports unfilled orders

NO LET-UP IN OUTPUT PREDICTED BY BANKER

BOSTON, Oct. 25—"Motor vehicles ranked third among the essentials which showed a shortage during 1922," Col. Leonard P. Ayers, vice-president of the Cleveland Trust Co., told the men gathered here to attend the annual conference of the Harvard Universal Committee on Economic Research at the Harvard Club this evening. There were 200 business men present.

"There were four shortages," Col. Ayers said. "The first was in building, the second railroad equipment, the third motor vehicles and the last was a general shortage of many lines of the thousands sold in stores. The record being made in automobile output will continue, as there seems to be no indication that it will diminish in 1923."

He predicted a real business revival, and gave facts upon which he based his optimism. His address made a deep impression upon those present. He predicted that there will be notably fewer motor companies competing for business in 1925, and added that in 1923 the automobile industry will reach an unparalleled pitch of competition.

sufficient to keep its plants busy for at least two months, with new business continuing large. The management has reduced bank loans from \$9,000,000 to \$500,000, and cash in hand is about \$2,500,000. No new financing will be required to carry out the company's policy of expanding production as fast as conditions warrant.

Mexico Levies 10 Per Cent Duty on Cars and Trucks

WASHINGTON, Oct. 23—Amounting to 10 per cent of the value as carried by the consular invoice, the Mexican government has imposed an import duty on automobiles and trucks. It became effective upon publication in the *Diario Oficial* on Oct. 20, according to a telegram received by the Department of Commerce from Assistant Trade Commissioner John P. Bushnell, Mexico City.

Automobiles have been admitted into Mexico free of duty since Jan. 7, 1919. Changes made affect all goods reaching the country after the date of publication and apply equally to imports from all countries.

It is understood that the duty is being imposed at the instance of a group of German and French manufacturers, coupled with some Americans, who have proposed to erect a large manufacturing plant in Mexico, provided they are given the tariff protection.

The new import duty will affect approximately 600 cars per month imported from the United States.

Southern Farmers Buying Power High

Best in Three Years, Bank Finds —More Liberal Loans Being Made

ATLANTA, Oct. 25—An investigation of crop conditions over the South this year as compared with last year, conducted recently by the Atlanta National Bank indicates that the twelve most important crops of the South, in 1922 returns in dollars, will bring to southern farmers at least one billion dollars more than the same twelve crops realized in 1921. This includes cotton, which this year brings southern growers about \$500,000,000 more than in 1921, with cotton seed about \$70,000,000 more.

The same bank advises that the buying power of the southern farmer is now at a considerably higher point than it has been at any time in the past three years, in spite of the fact that much of the money he makes on this year's crops will be needed for liquidation purposes.

No Difficulty to Borrow

Banks throughout the entire South are making more liberal loans to farmers than they have in some time in the view of their financial recovery this year, and it is no difficulty whatever to borrow money with which to purchase farm machinery or tractors, trucks or automobiles, especially if the latter are to be put to some productive use other than for mere pleasure.

What the increased buying power of the farmer means to the automotive industry in the South remains to be seen, but dealers and distributors almost invariably are looking for a normal volume of business between now and next spring.

Registration figures for the State of Georgia to Oct. 15, as compared with records to the same date in 1921, show a material increase this year, especially in the smaller counties where the population is principally rural.

American Bosch Expects to Gain Over September

SPRINGFIELD, MASS., Oct. 24—A. H. Bartsch, sales manager of the American Bosch Magneto Corp., has returned from a two weeks' trip in the Middle West and South and reports sales as very satisfactory.

The number of Bosch dealers throughout the country has been increased by 20 per cent in the last six months, and it is estimated that the volume of business done by branches and agencies in the month of October will exceed that of the preceding month.

Connections have recently been made with automobile manufacturers which promise a substantial expansion of production for the direct outfitting of cars, along with the growing trade in replacements.

Fine French Makers for Demonstrations

Records Were Established Without Approval Given by National Federation

PARIS, Oct. 10 (By Mail)—For having taken part in competitions, demonstrations or races not approved by the National Federation of automobile manufacturers, a fine of 20,000 francs each and a threat of expulsion from the automobile show have been pronounced against Renault, Delage, Voisin, Rolland-Pilain and Peugeot.

The group of manufacturers' associations which is responsible for the organization of the Paris show stipulates in its general conditions that no exhibitor shall take part in any race, competition, or sporting event which has not been approved by the National Federation.

Lamberjack, a Paris dealer, established a record from Paris to Milan on a 10 hp. Voisin. For this performance the Federation pronounced a 20,000 francs fine against Voisin and threatened to shut the firm's cars out of the Paris Salon. The Voisin directors refused to pay and declined to withdraw their cars from the show.

Delage Toured France

A Hartford shock absorber dealer established a record run from Paris to Madrid on a Delage car which was his own property. This was followed by a 3000 mile tour round France in five days by the Delage company, and for these two events the Federation pronounced a 20,000 franc fine against the Delage company. Rolland-Pilain made a fast run from the north of France to the Spanish frontier and was fined the same amount. Renault and Peugeot appear to have broken the law unintentionally. The former carried out an endurance test from Paris to Warsaw at a moderate rate of speed, and the latter made a demonstration run with a crude oil engine from Paris to Bordeaux and return, the average speed being less than 30 miles an hour, and they were put on the black list.

Voisin, Delage and Rolland-Pilain refuse to accept the decision of the Federation. They claim that they will not pay the fine and they contest the right of the Federation to shut them out of the national show held in a Government building loaned for the benefit of the entire automobile industry. Except in official circles the impression is that the action of the Federation is much too drastic, for it limits all activity on the part of makers and dealers to competitions and demonstrations approved by a small group. A fight to the end on this point is expected.

PARKER TIRE RECEIVERSHIP

INDIANAPOLIS, Oct. 25—The Parker Tire & Rubber Co., operating a plant in this city, has been placed in the hands

of a receiver by Judge Linn D. Hay. Suit was brought in the name of the Central Rubber & Supply Co., jobbers in mill supplies and automobile accessories.

Though insolvency is not claimed, it is alleged that an emergency exists and the assets of the company are endangered by numerous debtor claims and threatened suits. The Bankers Trust Co. has been appointed receiver. It is understood that, though the plant will not be operated for the present, its stock of tires will be sold by the receiver.

Ford Produced 42,096 Cars Abroad in First 8 Months

DETROIT, Oct. 23—For the first eight months of 1922 the foreign plants of the Ford Motor Co. produced 42,096 cars and trucks as compared with 20,756 in the same period in 1921. This does not include the Canadian plant, which built 37,696 units in this time, compared with 34,178 in the first eight months of last year. The Canadian company turned out 3511 in August. In South America, the Ford company says, business is showing wonderful improvement.

In the six foreign plants, not including Canada, the production for the first eight months of this year as compared with the same period in 1921 was as follows:

	1922	1921
Manchester	21,305	12,431
Buenos Aires.....	7,073	2,616
Copenhagen	7,013	3,713
Bordeaux	6,722	847
San Paulo.....	1,876	616
Cadiz	3,117	439

Cars Grow in Importance, Hardy Tells Service Men

DETROIT, Oct. 23—Automobiles will be the principal medium of transportation in the near future, President A. B. C. Hardy of the Olds Motor Works told the service managers gathered at the factory this week for the annual convention. It will rank next after food, clothing, housing and the telephone in importance in the life of the people, he said. Startling improvements will be made in the next five years, he declared, making for economy, lighter weight and increased power.

An exhibition of parts, illustrating mechanical features of the Olds models, will be made a permanent exhibit to promote the development of service at all times when dealers or service men visit the plant.

LEE IN MIDDLE WEST

WASHINGTON, Oct. 24—American automobile manufacturers and other business men in the Middle West will be told the trade extension work that is being conducted by the automotive division of the United States Department of Commerce in behalf of the automobile industry by Gordon Lee, chief of the division, who will leave Washington Nov. 1 on a ten day speaking tour through that section.

Crude Rubber Price May Force Up Tires

Manufacturers Remain Non-Committal on Action Likely to Be Taken

AKRON, Oct. 24—Akron tire manufacturers remain steadfastly non-committal upon the report that they have under consideration an increase in tire prices which may approximate 20 per cent. Despite their refusal to discuss the rumor, however, the matter of a tire price revision upward within the next month or so is considered probable by men close to the tire industry.

Strengthening the rumor of a price increase is the fact that crude rubber is soaring in price, having jumped from 14 cents to 23 cents a pound within the past two weeks, and that crude rubber quotations for winter deliveries show a considerably higher price, which is expected to keep on increasing.

Tire prices for some months have been the lowest in the history of the automotive industry and far below pre-war price levels, when tires did not give one-third of the mileage that the present day tire will average.

Some Companies at Advantage

When some companies cut prices last spring and again in the early summer, a few companies instead of following suit immediately introduced a new line of cheaper fabric and cross-rib cord tires to compete with the lowered prices of standard tires and kept their standard tires at standard list prices. This condition puts these companies almost in a position where they cannot well increase prices on standard brands of tires, whereas companies which lowered the prices of their standard casings are in a better strategic position to revise prices upward again.

Spring customarily is the time for tire price revisions, but with the crude rubber market strongly indicating a steadily rising price, it is considered very probable here that the motoring public soon may be paying more for its tires and that the increases will come before spring.

Mitchell Able to Make 100 Additional Bodies

RACINE, WIS., Oct. 23—A capacity for manufacturing 100 bodies a day is provided by the new paint shop and trimming works, established by the Mitchell Motors Co., Inc., in this city. The building is four stories high, 93 x 320 ft. in size, and is regarded as a model plant of its kind.

The building itself is closed airtight. Incoming air is forced to pass through washers to regulate the humidity and supply clean air for the paint and varnish rooms. Individual "weather machines" for each dry room provide heat and automatically furnishes the desired percentage of humidity.

Parts Makers Show Gain Over Year Ago

**This September Was 62.1 Per
Cent Better in Sales Than
Same Month in 1921**

NEW YORK, Oct. 24—Parts makers are doing a surprising business for this time of the year, according to reports from members of the Motor and Accessory Manufacturers Association. This statement is based on September, 1922, which is 62.1 per cent better than September, 1921. Last month sales ran to \$37,300,050 as compared with \$23,141,891 12 months ago. There is the usual seasonal slump but it is not as severe a one as in previous years. In fact, September may be compared with April of this year, which marked the start of great activity in the parts business.

Collections, too, are better than a year ago, although somewhat slower than in August. Past due accounts show an increase of 13.91 per cent in September, 1922, over August, while notes outstanding in September totaled \$2,658,800 as compared with \$3,677,500 in September, 1921.

Other reports on future business show that car manufacturers are buying conservatively. Purchases are not being made very far in advance; in fact, there are few who are ordering any further ahead than January.

Price Reductions Made by Case on Two Models

RACINE, WIS., Oct. 25—J. I. Case Threshing Machine Co. announces price reductions ranging from \$70 to \$370 on its passenger car models. No change has been made on the Model X phaeton and roadster. The list is as follows:

	Old Price	New Price
Model W, phaeton.....	\$2,200	\$1,990
Model W, sedan.....	3,250	2,975
Model W, coupe.....	2,850	2,480
Model W, sport.....	—	1,950
Model X, sedan.....	2,690	2,575
Model X, suburban coupe.....	2,550	2,480

Michelin and Dunlop Cut Prices of Tires Abroad

WASHINGTON, Oct. 23—The French Michelin Co. reduced tire prices in the Scandinavian countries about 20 per cent on Sept. 4, the English Dunlop company following immediately, according to a report from Paul L. Palmerton, chief of the Rubber Division of the Bureau of Foreign and Domestic Commerce, who is now in Europe investigating foreign markets for rubber goods.

The Michelin company altered its plan of distribution in Scandinavia about a year ago, and now has perhaps 18 to 20 per cent of the tire trade in Denmark, three to five per cent in Norway and probably less in Sweden.

SALES BY M. A. M. A. MEMBERS FOR 9 MONTHS SHOW AGGREGATE OF \$308,855,420

NEW YORK, Oct. 25—Reports from members of the Motor and Accessory Manufacturers Association show that sales in September, 1922, decreased 13.36 per cent over the preceding month, August, and that for the first nine months of this year the total sales amounted to \$308,855,420, or \$116,216,675 more than for the corresponding period of 1921.

The following table shows the sales by members of the association, the total past due accounts and the total of notes held for all the months of 1921 and the first nine months of 1922:

	Total Sales	Per Cent Change	Total Past Due	Per Cent Change	Total Notes Outstanding	Per Cent Change
1921						
January	\$6,264,587		\$8,099,727		\$4,359,871	
February	10,408,962	66.15 Inc.	6,717,165	17.07 Dec.	6,069,118	39.08 Inc.
March	20,120,386	93.30 Inc.	5,603,992	16.57 Dec.	5,069,877	16.38 Dec.
April	26,746,580	32.93 Inc.	5,352,271	4.49 Dec.	5,371,086	5.94 Inc.
May	26,781,350	.13 Inc.	4,505,176	15.64 Dec.	4,460,355	16.77 Dec.
June	22,703,414	15.19 Dec.	4,720,973	4.79 Inc.	4,012,670	10.37 Dec.
July	23,096,214	1.68 Inc.	5,242,046	10.79 Inc.	3,690,154	7.90 Dec.
August	23,397,640	1.31 Inc.	4,348,790	17.06 Dec.	3,494,510	5.30 Dec.
September	23,141,891	1.09 Inc.	4,358,545	.22 Inc.	3,677,500	5.24 Inc.
October	22,053,327	4.70 Dec.	4,512,630	3.54 Inc.	3,463,500	5.82 Dec.
November	18,998,490	13.85 Dec.	4,352,000	3.56 Dec.	3,661,900	5.73 Inc.
December	14,349,750	24.47 Dec.	4,220,450	3.02 Dec.	3,384,250	7.58 Dec.
1922						
January	17,320,000	20.61 Inc.	4,450,000	5.45 Inc.	3,146,000	7.02 Dec.
February	22,720,000	31.17 Inc.	4,070,000	8.57 Dec.	3,483,000	10.74 Inc.
March	28,670,000	26.14 Inc.	2,890,000	28.86 Dec.	2,657,000	23.69 Dec.
April	33,830,000	18.07 Inc.	3,000,000	2.00 Inc.	2,500,000	1.05 Dec.
May	43,700,000	28.06 Inc.	2,900,000	2.75 Dec.	2,450,000	6.05 Dec.
June	42,000,000	3.85 Dec.	2,840,000	1.25 Dec.	2,320,000	5.00 Dec.
July	41,001,670	2.42 Dec.	3,423,850	20.42 Inc.	2,217,670	4.49 Dec.
August	43,700,000	5.00 Inc.	3,705,000	8.21 Inc.	2,398,350	8.15 Inc.
September	37,300,050	13.36 Dec.	4,220,400	13.91 Inc.	2,658,800	10.86 Inc.

Price reductions were made by Michelin in Belgium on Sept. 1, and similar reductions are reported in France. The Belgian Englebert Co. has also adopted the new Michelin price list in Belgium.

TWIN CITY TRUCK CUT

MINNEAPOLIS, Oct. 23—Minneapolis Steel & Machinery Co. announces the following reductions in the price of Twin City motor trucks:

	Old Price	New Price
2-ton model.....	\$2,750	\$2,400
3½-ton model.....	3,950	3,500

Page Makes Last Payment on Plainfield Property

PLAINFIELD, N. J., Oct. 23—Carl H. Page, president of the American Motors Corp., has made the final payment of \$5,646.48 on the total purchase price of \$200,000 set upon the property by the court at the receiver's sale, and the reorganized company of which Page is the head has formally taken over the plant.

Under the reorganization plan put into effect some months ago, interests identified with the original company have provided working capital amounting to about \$250,000, and it is announced that the balance of the new company's stock will be turned over to a group of Philadelphia brokers under an arrangement that will net the company an additional amount of \$250,000.

President Page reports that September was the best month in the company's history, and he expects the plant will be running on a 1000 cars per year basis within the next 60 days.

Chapin Back Announcing Depot Opened in London

NEW YORK, Oct. 25—Roy D. Chapin, president of the Hudson Motor Car Co., was one of the passengers on the Majestic, returning from a 10 weeks' business trip in France and England. As a result of the trip Chapin announces the establishment of a general European depot in London for the distribution of Hudson and Essex cars.

Chapin said:

We intend going after European business on a much larger scale than ever before and the establishing of this depot will facilitate business from an exchange and delivery standpoint.

Because of taxes and the high price of gasoline, there is a distinct tendency in Europe to get in for the small car. Also there is a tendency to use motor vehicles less commercially and more for pleasure than we here in America. Cars of the same quality of European manufacture are far more expensive than those of American manufacture which is caused by the limited volume of production in Europe.

American Steam Truck Acquires Duty Factory

CHICAGO, Oct. 24—The American Steam Truck Co. to-day announces the completion of negotiations by which it acquired the factory of the Duty Motor Truck Co. at Elgin, Ill. These negotiations have been in progress for several weeks, and for a time it appeared as if they would fail because of the opposition of some members of the Elgin Chamber of Commerce.

Men of the Industry and What They Are Doing

Wood Heads Coach Company

Frederic T. Wood has been elected president and general manager of the Fifth Avenue Coach Co. and the New York Transportation Co. to fill the vacancies caused by the resignation of President John A. Ritchie and Vice-President and General Manager George A. Green, who have joined the Yellow Cab Manufacturing Co. of Chicago, as president and vice-president and general manager, respectively. Wood will fill the dual rôle, while R. E. Fisher will continue as chief engineer. Wood comes into the presidency with an experience of 20 years as a student of transportation, some of which time has been devoted to studying the problems of London and Paris. Previous to his present connection he acted as secretary to Job Hedges, receiver for the New York Railways.

The New York Transportation Co., the parent concern, will continue the manufacture of motor buses, although no statement has been issued as to its future plans in this department.

McConnell Leaves Klaxon

D. A. McConnell has resigned the presidency of the Klaxon Co. of Newark, N. J., effective Dec. 31, although his active connection with the company ceased Oct. 15. As yet McConnell has formulated no plans as to his future business connections. In all likelihood he will spend the winter in California. With F. Hallett Lovell, Jr., McConnell formed the Lovell-McConnell Manufacturing Co. in 1906 to manufacture the Klaxon horn which was one of the pioneers in the electric warning field and which was invented by Dr. Miller Reese Hutchinson. In 1916 Lovell retired following the selling of the Lovell-McConnell interests to United Motors, which in turn transferred the interests to General Motors a couple of years ago. Lovell retired from business altogether at the time and McConnell remained with the Klaxon interests as president and general manager until the present.

Wilson Chalmers Sales Director

Earl B. Wilson has been appointed director of sales of the Chalmers Motor Co., following his resignation from the sales department of the Willys Corp. For several years he was connected with Buick in branch and factory sales work, serving in Chicago, Memphis, Philadelphia and Flint. He entered the sales field first handling farm machinery, serving several years before entering the automobile business.

Locomotive Makes Changes

Clinton B. Amorous, manager of the Locomobile Co. of America's Boston branch and in charge of its New England distribution, has been made man-

ager of the New York Locomobile branch, relieving E. A. Travis, general sales manager of the Locomobile company, of the detail of responsibility of the branch. Under the arrangement, Travis will be able to devote his entire time to the duties of general sales manager of the recently reorganized company. W. S. Porter, Chicago branch manager of the Locomobile interests, succeeds Amorous in Boston. Porter in turn is succeeded in Chicago by J. Murray Page, who lately has been representing Marmon interests in Chicago and the West.

Cravens to Go Abroad

George W. Cravens, president of the Climax Engineering Co., of Clinton, Iowa, will start on a trip to Europe shortly to investigate the Diesel engine situation there.

Rickenbacker in Turin

E. V. Rickenbacker, vice-president and director of sales of the Rickenbacker Motor Co., is now at Turin, Italy, visiting the Fiat plant, builders of the car which won the last French Grand Prix. After a visit to Germany to inspect the automobile and aircraft manufacturing plants, Rickenbacker attended the Paris show and from there went to Italy. He will return to America by way of England, stopping off for the London exhibition. In all he will have spent two months in Europe on his wedding trip, in which he combined a search for new developments in the automotive field.

T. E. Myers Sails for Europe

T. E. Myers, secretary and general manager of the Indianapolis Speedway, sailed for Europe on the Aquitania Tuesday. The Indianapolis Motor Speedway Co. is sending him to get a line on the prospects for European factory entries in the eleventh annual international 500 mile sweepstakes on May 30 for 122 cu. in. cars. On arriving in Europe, Myers will be met by W. F. Bradley, of Paris, who will accompany him on his visits to the European factories. Myers plans to visit plants in England, France, Belgium, Germany, Australia, Italy, and also to inspect the famous cement bowl at Brooklands and the new Monza track at Milan. The Indianapolis speedway has decided to accept entries from Germany and Austria for the coming race. Entries also are expected from Fiat, Sunbeam, Ballot, Peugeot and Mercedes.

Crabtree Succeeds Tisdale

William O. Crabtree, formerly representing the Bethlehem and Republic trucks in New York City, succeeds Glen A. Tisdale as New York representative of the Franklin. Crabtree will take over the Franklin agency and act as distributor for Manhattan and the Bronx.

Woodworth Joins Fuller

Frank Woodworth of the Remy Electric Co., Anderson, Ind., has been appointed production manager of Fuller & Sons Manufacturing Co. He succeeds William T. Clark, who has severed his connections with the plant. The position will not be a new one for Woodworth for he was with the Fullers when they built the first unit of their present modern factory.

Multibestos Appoints Miner

E. C. Miner has been named sales manager of the Multibestos Co. of Walpole, Mass.

Harvey With Matthews

R. B. Harvey, formerly of the Westinghouse company and the Litscher-Lite Corp., has been appointed sales manager of the farm light and power division of the Matthews Engineering Co. of Sandusky, Ohio. Harvey's experience covers every phase of the farm light and power business from manufacturing to sales.

Pardee Returns to Commercial

C. L. Pardee, Jr., at one time credit manager for the Commercial Investment Trust Co., has returned to that concern in the same capacity. Pardee has been engaged in handling personal matters since leaving the organization in 1915.

Will Speak at Convention

Representatives of the automotive industry will be among the principal speakers at the fifth annual convention of the Direct Mail Advertising Association to be held in Cincinnati Oct. 25, 26 and 27. Harry Tipper, business manager of AUTOMOTIVE INDUSTRIES, will speak on "The Broader Outlook of Business"; A. B. Batterson, director of advertising, Buick Motor Co., Flint, Mich., will talk on "A House Organ That Brings Real Financial Returns," and Walter J. Towers, advertising manager, Paige-Detroit Motor Car Co., will talk on "Twelve Million Dollar Sale of a New Product in Six Months."

J. C. Agnew Appointed

J. C. Agnew, for several years sales manager for Frank H. Sanders, former Chicago dealer for the Franklin, has been appointed assistant sales manager of the Detroit Air Cooled Car Co., Detroit.

ONE EQUIPMENT SHOW

CHICAGO, Oct. 23—The open show of automotive equipment, which was scheduled to be held at the Chicago Armory the week of Nov. 13 simultaneously with the Automotive Equipment Association's show for its members has been called off, it was announced to-day by Charles P. Hughes, promoter of the enterprise.

Manufacturers Adding New Models to Lines of Cars

Haynes

KOKOMO, IND., Oct. 24—A new Model 55 sport coupelet has been added to the Haynes 1923 line. The price is \$2,095. It carries three passengers, has complete sport equipment and is finished in Haynes coach blue. The equipment includes six disk wheels with six cord tires, a trunk on a trunk rack at the rear, nickel plated radiator and headlamps, Moto-Meter, sun visor, etc.

The seat is upholstered in black long grain leather while the remainder of the interior above the belt line is in fabric. There is a compartment at the rear of the seat and a luggage space in the rear deck. A gasoline gage is on the dash and a stop light is part of the regular equipment.

The newest Haynes model is the Model 55 sport sedan for \$2,695. The chassis and body are the same as the standard Model 55, but a considerable amount of equipment is added. Six disk wheels with six cord tires, 32 by 4½ in., are standard, and other equipment includes a trunk, nicked bumpers front and rear, adjustable visor, protection bars, individual steps and individual fenders. Finish is in deep maroon.

King

DETROIT, Oct. 23—Two new closed bodies have been added to the King line. These are a sedanette and a seven-passenger sedan added on a chassis which is similar in all respects to the standard King chassis, except that it is 124 in. wheelbase instead of 120. Mechanically, the cars are the same as previously with the exception of the adoption of a ball bearing steering thrust bearing in the steering knuckle in place of the plain bearing. The axle is a Columbia, however, as previously.

In the fittings, the drum type headlamp has been adopted and parking lights of similar design as the headlamps are also part of the standard equipment. The fender lines have also been altered somewhat to coincide with the exterior lines of the body. The sedanette sells for \$1,995 and the seven-passenger sedan for \$2,550.

Cleveland

CLEVELAND, Oct. 25—A new two-door sedan is added to the Cleveland six line, the price being \$1,295. This replaces the coupé. It carries five passengers and has a trunk platform and barrel type headlamps. The color scheme is gray and the individual front seats tip forward. In addition to this new model, changes have been made in the prices and equipment of the phaeton and four-door sedan.

The phaeton is now \$995 instead of \$1,095, and the four-door sedan is \$1,495 instead of \$1,585. In both cases the reduction has been accomplished by a reduction in the amount of additional equip-

ment which may still be had at the former price. All these bodies are Fisher built.

Nash

KENOSHA, WIS., Oct. 25—A new Nash roadster on the six cylinder chassis takes the place of the previous roadster. The price is \$1,210, the same as on the old model. The top is ecru silk mohair and the upholstery is dark gray Spanish leather. The wheels are finished in bright vermillion. A new type ventilator is used on the cowl, the windshield being of the one-piece type. Other refinements include a new steering mechanism, Oil Kip equipment, new barrel type headlamps and parking lamps. Across the front of the chassis side members is a bar to prevent weaving of the frame.

Dorris

ST. LOUIS, Oct. 24—The Dorris Motor Car Co. is fitting a new "custombuilt" sedan to the regular chassis, the price being \$6,800. The bodies are made to specification by the Hume Body Corp., Boston, and are finished, painted and upholstered at the Dorris factory. The painting and upholstery is according to the purchaser's selection. The frame construction is hardwood and the metal covering is aluminum. The equipment is very complete.

Seiberling Makes New Pneumatic Truck Tire

AKRON, Oct. 23—Seiberling Rubber Co. announces a new pneumatic truck tire which is called the All-Tread and which now is in production in the following sizes: 30 x 3½, 32 x 4½, 34 x 4½, 33 x 5, 34 x 5, 35 x 5, 36 x 6, 38 x 7 and 40 x 8. The 30 x 3½ is of 3.85 dimension, six ply, for Ford delivery trucks and for use on Ford passenger cars where road conditions are severe.

The feature of this new model is that the tread design is extended down the side walls, the heavy bars running almost to the bead. The tread rubber goes from bead to bead and is extra heavy, of about 4200 lb. per sq. in. tensile strength. There is an extra wide breaker strip, a double thick cushion of rubber between the last few plies.

REO ADDS TO EQUIPMENT

LANSING, MICH., Oct. 25—Reo Motor Co. is planning to install a new air compressing system and also to add to its enameling ovens. With this new equipment the total expenditure by the company in 1922 for machinery to increase and improve production will reach about \$500,000. Sales are reported to be in excess of production at the present time, due in part to material shortage occasioned by the railroad situation.

Paris Show Results Are "Good to Fair"

Activity Shown by Provinces—Prices for Cars Declared Too High

PARIS, Oct. 14 (by mail)—Net results of the Paris automobile show, which will close its doors to-morrow night, after having been open for 12 consecutive days, are declared to be good to fair. The French provinces have shown activity, but business in the capital has been sluggish. Foreign dealers who have to face American and German competition declare that French prices are too high and attribute this to the fact that, by reason of the exchange situation and the protective tariff, the home industry in France is completely protected.

For the first time the used car problem has become serious. Dealers are asking the makers to assist them in the disposal of used cars taken in exchange, but the factories have no organization for dealing with these.

This year's show was marked by an unusual amount of newspaper advertising on an American scale. Instead of the old custom of paying for advertising "puffs" to be inserted in the reading columns, which before the war was the only kind of publicity known to French automobile manufacturers, several of the big companies ran full page advertisements at \$5,000 a page in the daily papers.

Citroen, who has an American publicity expert at the head of his advertising department, was the leader in this direction, and in addition he adopted for the first time in France the English system of writing in the sky by white smoke emitted from an airplane.

Thorne Machine Builds First Steinmetz Model

SYRACUSE, N. Y., Oct. 24—Announcement is made by the Thorne Machine Tool Co. of this city of the completion of a new model electric car for the Steinmetz Motor Car Co. of Baltimore. This is the first of four to be made for experimental purposes, the experiments lasting about a year before production will be attempted. The car has been built under the direction of Charles P. Steinmetz and the work here has been in charge of Oscar C. Kavie and L. W. Moulton of the Manufacturers' Consulting Engineers.

In producing the model the aim has been to develop an electric driven vehicle weighing under 2000 lbs., with a speed up to 40 m.p.h. and an operating radius of 200 miles. The motor, it is said, will be placed in the rear axle housing.

Emphasizes Quality in Buying Material

Price Not Sole Factor To Be Considered, Jordan Tells Purchasing Agents

DETROIT, Oct. 24—Edward S. Jordan, president of the Jordan Motor Car Co., addressing the Purchasing Agents Association of Detroit, stated that automobile manufacturers who are to prosper in the future will be those who carefully choose their material with reference to quality rather than price. He deplored the practice of allowing price to govern entirely in the purchase of materials and parts.

Commenting on Ford's recent price cut Jordan stated that this created "2,000,000 more students in the kindergarten of the automobile." In other words, it brought 2,000,000 more car owners into the field and, consequently, is of the greatest benefit to the entire industry. He said that Ford's sole purpose in cutting the price naturally is to sell more automobiles. Regarding future prices of other makes, he stated that the next two or three years would find prices declining at intervals.

Industry in Five Phases

Drawing a picture of the progress of the automobile industry to date, he pointed out that it has gone through five distinct phases, the first of which was when the engineer controlled the entire business. In the early days, he said, the engineer or mechanic would deal with the rich young sport in the neighborhood and, consequently, became the automobile dealer. The first dealers were mechanics. The second phase of the industry was when the production manager began to become a dominant factor. The ability to manufacture a good automobile in quantities was the criterion of success during the second period.

The third phase was that of the sales manager, in which the ability to sell the product was the paramount necessity for success. The fourth phase, Jordan stated, was that of service, and finally the fifth phase has been reached in which the owner has become the dominant figure and a company, to succeed, must build a car which pleases the owner. Jordan stated that this quotation has been made, beginning with Norval Hawkins, probably 700,000 times and has been forgotten just as often.

Example of Owner Dominance

He tied his statements of the dominance of the owner in the field up with the second-hand value of the car. The car which pleases the owner most, naturally, is the one which has the greatest second hand value. He stated that on lists sent out to dealers all over the country asking these dealers to put down the list price of each car and alongside the car which had the greatest relative resale value, it was found that the names

NEWBURGH RAILWAY ADOPTS MOTOR BUS

NEWBURGH, N. Y., Oct. 23—The Orange County Traction Co., of which B. B. Odell, former governor of New York, is the head, has put motor buses into service on two of its branches, replacing six trolley cars with seven buses. The main line, which runs 12 miles to Walden, still uses trolleys, but on the branches the buses act as feeders to the main lines. The new system has been in operation three weeks and has proved a success. The buses are of the type used by the Fifth Avenue Coach Co. of New York, only smaller.

of twelve manufacturers appeared on the list of all of the dealers. These twelve manufacturers are naturally the most consistently successful in the field.

In illustrating his point, he took two cars, A and B, selling for \$1,500 each originally. One car, he stated, had a maintenance bill of \$100 for the year and a depreciation of \$200, making the total cost to the owner of \$1,800 for the year. The second car had a maintenance bill of \$200 for the year and a depreciation of \$500, which brought the price of this car to \$2,200 to the owner. He used this to illustrate the point that the owner is becoming educated to the fact that the first price of the car is not the only point to consider. The depreciation, or, in other words, the re-sale value must be taken into consideration when figuring the expenditure for the car. Also the ability to service the car at low price.

Competition, he said, is becoming tremendous, particularly in the low-priced field. He called the price class up to \$1,000 a whirlpool rapids of the automobile industry and stated that anyone who is not a strong swimmer had better stay out.

Competition for Dealers Also

Competition, he stated, was not for actual car sales but for dealers, and the opportunity for those in the price class of \$1,500 and above to secure these dealers was offered when the dealer in the low-priced field found his territory cut so small and his commission down to such an amount that the pace became too hot for him and he jumped out into the higher priced field where the sailing is easier.

In making his prediction for the next 18 months, he said that during the next six months the industry will be in the period where all of the closed cars that can be manufactured will be absorbed. This six months will be followed by a period of price competition in the closed car field.

Regarding the well known saturation point, he stated that this will never be reached until everybody who desires to go from one place to another or to transport goods from one place to another has an automobile.

Chapin Tells France Import Duty Is Cut

No Newspapers There Carried Item of Tariff Action by U. S. Senate

PARIS, Oct. 14 (*by mail*)—French automobile manufacturers are quite unaware that the United States Senate has reduced import duties to 25 per cent, for not a single newspaper thought it necessary to carry this news, notwithstanding the fact that for several years the French Government and French manufacturers have been protesting against what they term the unjust 45 per cent American duty.

Roy D. Chapin, president of the Hudson Motor Car Co., who is at present in this city, stated that he had not met a single French manufacturer who was aware that the American automobile industry had gone to Congress with a request that import duties be lowered. "Even the secretary of the international organization, known as the Bureau Permanent, was unacquainted with this move," Chapin declared.

Will Meet Manufacturers

In order to pave the way for official action, an informal meeting has been arranged for next week, when Chapin and H. H. Rice, president of the Cadillac Motor Car Co., will meet several of the French manufacturers.

With a 45 per cent import duty and the low value of the franc, France is at present the most protected country in Europe. It appears necessary to point out to the French makers that, if they wish to take advantage of the 25 per cent duty adopted by America, it is essential that they abandon their ultra protectionism.

A step in this direction has already been taken by Belgium, which nation has intimated that at the meeting of the Bureau Permanent, to be held in London on Nov. 1, she will raise the question of import duties throughout the world. This bureau unites the delegates of all the national automobile manufacturers' associations throughout Europe (Germany excepted). Although the United States never ratified her membership in the bureau, it is understood that an invitation is being extended to Rice to attend as the representative of the National Automobile Chamber of Commerce of the United States.

Countries Favor Reduction

It is believed that the Belgian delegates will propose a moderate and uniform rate of import duty, which probably will be the figure adopted by the United States. Engineer Marchesi, president of the Bureau Permanent and the Italian delegates, has on several occasions declared that Italy is in favor of such a measure; Belgium and England are favorably disposed toward a reduction, and only the French attitude remains doubtful.

High Garage Rentals Retarding Car Sales

Colin Campbell Tells Chevrolet
Dealers That Big Cities
Need Relief

DETROIT, Oct. 23.—Lack of garage space was declared by Colin Campbell, general sales manager of the Chevrolet Motor Co., to be a restraining influence against a greatly increased volume sales of cars in congested eastern cities. Such conditions, he said, were holding back the immediate sale of approximately 100,000 cars in New York alone.

He urged that architects, engineers and civic authorities begin to take the transportation needs of the public more into consideration in developing plans for apartment houses, office buildings, civic structures and highways. Modern apartment buildings in congested districts, he recommended, should have three or four sub-cellars with ramps to provide for car storage if such buildings are to meet tenant requirements of the future. Multiple deck streets already are a crying need in many cities to provide adequately for traffic and car parking.

No Saturation Point Near

His remarks on traffic and garage conditions were in refutation to the report of any saturation point for automobiles being near or possible. He further stated that the limiting factor of the industry, if it ever occurred, would be governed entirely by the capacity of the highway and streets in large cities. He remarked further that but seven per cent of the highways in this country were improved at the present time and that the industry, aside from its natural normal growth each year, would have to grow with the highways as they were improved.

Campbell addressed Chevrolet dealers of zone No. 1, which includes Michigan, the northern half of Indiana and the northern half of Ohio, at a sales meeting in the Hotel Statler, in which he outlined the business possibilities of the new Chevrolet line.

Addresses Remarks to Bankers

Bankers attending the meeting with dealer clients were addressed directly by Campbell in a request for co-operation for the automobile industry as represented by automobile dealers in their respective localities. He brought particularly to the attention of the banking interests the relative importance of the industry to the business and social life of the nation.

Dealers should justify the confidence of the bankers by setting their own business in order, he said, and where dealers have not had sufficient capitalization to conduct their business properly from a credit standpoint, they should prepare immediately to change such conditions.

135,000 Automobile Owners Leave City for Suburbs To Meet Problem of High Rents for Homes

NEW YORK, Oct. 23.—Compiling statistics for the forthcoming conference of the Highway Education Board at Washington, Oct. 26-28, on the uses to which the motor car is put by its purchaser, the National Automobile Chamber of Commerce finds that in 135,000 instances the motor car has been used as a vehicle of relief from high city rentals, the owners of this number of automobiles having moved from the city to the suburbs and depending solely upon their cars for transportation between their offices and homes.

The 60 cities from which reports have been received include only three chief municipalities, Baltimore, Detroit and Cleveland. The combined population of the reporting cities is about 8,000,000. If the same ratio is maintained throughout the rest of the United States, not fewer than 500,000 automobiles have been used during the past three years in the fight against high rents.

Baltimore and Detroit are tied for first place in the number of motor cars used primarily to carry workers to and from their work each day. In each case the number is approximately 25,000. Louisville is rated next, in returns compiled thus far, with 20,000. Oak Park, Ill., and Cleveland are rated at 5000 cars each; Toledo at 3500; Tampa, Dayton, Pasadena and Casper, Wyo., at 3000 each. Eight cities—Danville, Ill.; Waterloo, Ia.; Nashville, Winston-Salem, Tulsa, Houston, Richmond and Bellingham, are reported to the Chamber as having 2000 cars each which have been devoted to this purpose.

K. T. Keller, general production manager, referred to the change that had been taking place from the old to the present models and said that, in consequence, production naturally had tapered off, but had been resuming very fast since the announcement of the new models. In a few days he said production will be within the regular schedule of 1250 cars a day at the various plants in the United States.

New Fisher body plants located at the present Chevrolet assembly plants will build closed cars exclusively for Chevrolet he said, which would assure the dealers of ample quantities of such models. Closed body production the past year totaled approximately 84,000 cars of various models of that type, and such business has been rapidly increasing.

George Frank Lord, advertising manager of the company, stated that extensive plans of national advertising had been worked out to aid dealers in their sales efforts, and that the dealers are expected to co-operate in their individual localities. The extent of future advertising will be materially affected by the degree to which dealers co-operate with the company. Under the plans as proposed, the Chevrolet message will be taken to every American family.

FORD'S SEPTEMBER OUTPUT

DETROIT, Oct. 25.—In September, during which it was shut down four days, the Ford Motor Co. produced a total of 95,126 cars and trucks in the home and foreign plants in comparison with 136,132. Of this total the six foreign plants turned out 5369 and Canada 3511.

CHAS. H. WOODRUFF DIES

DAYTON, OHIO, Oct. 24.—Charles H. Woodruff, former sales manager of the O. Armleder Co. of Cincinnati, manufacturer of the Armleder truck, died suddenly Friday night, following an acute attack of indigestion.

Britain Shows Gain in August Exports

WASHINGTON, Oct. 25.—Exports of motor vehicles and parts from the United Kingdom in August totaled £214,223, or an increase of 31 per cent over July when they amounted to £162,376, which was an increase of 23 per cent over June. The July exports were made up of 77 passenger cars valued at £39,062; 46 motor trucks valued at £25,770; 64 chassis valued at £32,421 and parts valued at £65,123.

The August exports consisted of 82 passenger cars valued at £41,438; 63 motor trucks valued at £35,836; 128 chassis valued at £53,799 and parts valued at £83,150.

While exports of passenger cars increased but little, chassis exports again increased 100 per cent in number and truck shipments showed a gain of 39 per cent in August as compared with the previous month. The largest increases in July as compared with June were 128 per cent in number for chassis and 70 per cent in number for trucks.

Sixty-one of the 64 chassis exported went to British possessions, the largest market being Australia. Australia, New Zealand and the Channel Islands were the largest markets during August among the British possessions, while exports to foreign countries went chiefly to Denmark, Germany, the Netherlands, China, Japan and Siam, but none of these countries took large numbers of vehicles.

GEAR SALE NOT CONFIRMED

ALBANY, N. Y., Oct. 23.—Judge Cooper to-day refused to confirm the sale of the New Process Gear unit of the Willys Corp. to T. W. Warner of Muncie, Ind., who had offered \$1,904,000 at the receiver's sale, the only bid made. Following the sale, protest was made by two other prospective bidders who asked for an opportunity to bid.

Packard Adds Extra Dividend to Regular

Declares 2½ Per Cent on Common Stock, First Payment Since October, 1920

DETROIT, Oct. 24—Increased prosperity of the company and the favorable outlook for a continuation of good business are the reasons given by the directors of the Packard Motor Car Co. for the declaration of a 2½ per cent extra dividend in addition to the regular quarterly dividend of 2½ per cent in cash on the company's common stock, of which there is about \$11,885,100 outstanding. Both dividends are payable on Oct. 31 to stockholders of record at the close of business Oct. 25. The total payments in the October dividend will aggregate \$594,205.

The last previous payment was in October, 1920, at the rate of 10 per cent per annum on stock of the par value of \$10 a share.

Packard is enjoying its greatest prosperity at the present time, its profits being greater than at any other time in its history save for a brief time during the war when the manufacture of Liberty engines brought in rich returns. Its profits run from \$600,000 to \$900,000 a month at the present time.

The factory reports that it is unable to catch up with orders on its single six. Starting with a production of 800 a month, it has climbed to 1600, and it expects to manufacture 2000 single sixes in November.

Buick Makes Shipments to Northwest by Boat

DETROIT, Oct. 24—Boat shipments to the northwest territory are being used exclusively by the Buick Motor Co. because of existing railroad conditions. Cars are driven away by dealers on arrival in Duluth.

Buick officials point out that the present record production at the Flint and Detroit plants has been reached in the face of railroad embargoes and car shortage. Motor trucks are being used to speed-up material deliveries, one load of brass fittings from Bristol, Conn., by truck, being transhipped over the lakes from Buffalo to Detroit.

Favorable weather for driveaways and the availability of lake shipping vessels has been of importance in getting cars away from the factory when completed. Maintenance of a production of 700 cars a day at this time, however, is declared by officials to require tremendous effort.

MORE CONTINENTAL CAPITAL

RICHMOND, Oct. 25—Stockholders of the Continental Motors Co. at a special meeting held here to-day approved an authorized increase in the capital stock to 3,000,000 shares of no par value, of

which 1,500,000 shares are to be exchanged for the present stock of \$10 par value.

FINANCIAL NOTES

Stewart-Warner Speedometer Corp. have earned the equivalent of \$3.49 a share on its outstanding stock in the quarter ended Sept. 30, has increased its quarterly dividend from 75 cents to \$1 a share, payable Nov. 15. Total earnings after taxes for the quarter were \$1,657,554, indicating the continuance of sales at a high point. For the first nine months of this year the profits have been \$3,514,078, equal to \$7.40 a share. This compares with profits of \$1,039,572 in the corresponding period of 1921.

Madison Tire & Rubber Co. at a special meeting adopted a resolution authorizing the company to borrow a sum not in excess of \$750,000 and to execute a serial bond and mortgage on the real property equipment and machinery owned by the corporation at Buffalo.

McKone Tire & Rubber Co. has declared a semi-annual cash dividend of 3 per cent, covering operations of the past six months, to the common stockholders of record Oct. 1.

Lee Rubber & Tire Corp. directors have declared a dividend of 50 cents a share on the capital stock payable Dec. 1 to stockholders of record Nov. 15.

Profits of \$5,000,000 Reported by Firestone

AKRON, O., Oct. 23—With net profits of \$5,000,000 for the first eight months of the year, it is expected the Firestone Tire & Rubber Co. will close its fiscal year Oct. 31 with net profits of between \$7,000,000 and \$8,000,000. The company has had a good season. Starting with a production of 23,000 tires a day production went as high as 28,000. It has been running slightly in excess of 26,000 since then.

When the company started the year its inventory was \$12,534,369, reduced from \$45,163,710 as of Oct. 31, 1920. Current assets were \$34,000,000 against current liabilities of about \$23,000,000, of which \$21,000,000 was in notes. Because inventory losses of more than \$16,000,000 were taken last year, it is expected that no further losses will be shown in the annual statement.

69 Headlight Devices Illegal in New York

ALBANY, N. Y., Oct. 25—Sixty-nine of the nearly 100 automobile headlight devices previously approved for use in New York State have been declared illegal by the State Tax Commission. The final list will not be announced until several other manufacturers have had a hearing.

Under the law manufacturers and users of condemned devices have six months from date of notices of withdrawal of approval in which to dispose of their devices or fit their cars with legal headlight equipment.

BANK CREDITS

Written exclusively for AUTOMOTIVE INDUSTRIES by the Guaranty Trust Co., second largest bank in America.

Last week call loans covered a range of 4½ per cent to 6 per cent, as in the preceding week. Time money was quiet and also was without essential change. Toward the end of the week rates were firm at 4¼ per cent for 60 days' maturities, and 4¼ per cent to 5 per cent for 90 days', four, five and six months'. These rates were the same as in the preceding week. The prime commercial paper market continued to be quiet at 4¼ per cent to 4½ per cent.

For the week ending Sept. 30 the number of freight cars loaded was the largest recorded since Oct. 22, 1920. Although car loadings for the week ending Oct. 7 were 20,212 less than for the week of Sept. 30, the requisitions for freight cars needed in excess of the supply available totaled 141,252, a gain of 10,927 cars over Sept. 30.

The production of steel ingots during September shows a prompt recovery from the recent curtailment in production, due principally to the coal and railway strikes. Production during September amounted to 2,374,000 tons, an increase of approximately 7 per cent over the August production, and slightly more than twice the output during September, 1921. The pig iron output during September also showed an increase of slightly more than 9000 tons per day, the total output being 2,033,720 tons, as compared with 1,816,170 tons in August.

Although building contracts awarded during September declined 16 per cent from the August figures, chiefly on account of seasonal activity, the total is the highest September total on record, and is 11 per cent greater than the amount reported for September of last year. Total construction for the nine months of 1922, moreover, is greater than that of any preceding annual total, and is 51 per cent more than the total contracts awarded for the first nine months of 1921.

The Federal Reserve statement as of Oct. 18 showed a decrease of \$3,167,000 in gold reserves, but an increase of \$4,180,000 in total reserves. Total bills on hand declined \$3,492,000, and total earning assets \$31,143,000. Deposits showed a gain of \$33,882,000, while Federal Reserve notes in circulation increased \$4,678,000. The reserve ratio declined from 75.7 per cent to 75.2 per cent.

SCAT RECEIVERSHIP

WASHINGTON, Oct. 25—The Societa Anonima Ceirane Manufacturing Co., maker of the Scat automobile, with headquarters in Rome, has gone into the hands of a receiver, according to cable advices to the automotive division of the Department of Commerce.

The company has offered its creditors a settlement of 40 per cent. According to the balance sheet of the company, its assets are listed as Lire 12,143,201.14 and its liabilities, Lire 19,785,878.50.

Autocar Completes Twenty-fifth Year

Fourth Company in Industry to Round Out This Period of Manufacturing

NEW YORK, Oct. 23—The Autocar Co. of Ardmore, Pa., completed its twenty-fifth year as a producer of motor vehicles on Saturday, thus becoming the fourth concern in the industry to round out a quarter century of manufacturing. On this honor roll of pioneers are found the names of Haynes, starting in 1895, and Winton, Stanley and Autocar, which began operations 25 years ago and which still are engaged in automobile manufacturing.

There are eleven other concerns which, the records show, have been in business 20 years or more and which include Locomobile, 1899; Stearns, 1899; Packard, 1900; National, 1900; Oldsmobile, 1901; Peerless, 1902; Nash (formerly the Rambler and Jeffery), 1902; Franklin, 1902; Cadillac, 1902; Jackson, 1902, and White, 1902. The present Packard started as the Ohio Auto Co. of Warren, Ohio, in 1899 and became the Packard company in 1903.

Within the gunshot of the 20 year class are the Apperson, which started in 1903, following the split-up of the Haynes-Apperson Co.; the Auburn, 1903; Buick, 1903; Mitchell, 1903; Reo, 1904, and Studebaker, 1904.

Louis S. Clarke founded the Autocar Co. and still is active as vice-president. He first experimented with electric vehicles in 1890 at Pittsburgh, beginning his experiments with the gasoline engine in 1895 and in 1897 combining with William Morgan, also of Pittsburgh, which marked the beginning of the Autocar Co. The concern was incorporated under its present name in 1899 and was moved from Pittsburgh to Ardmore.

Making passenger cars at the start, it featured a two-cylinder runabout which was one of the most advanced types of the pioneer days. In 1902 it exhibited at the New York show what is claimed to have been the first shaft driven car built in America. In 1908 the company took up the manufacture of trucks, abandoning the passenger car. To-day the principal stockholders are the same who started the business.

STEEL GROUP MEETS

CHICAGO, Oct. 23—Chief executives and operating officials of the companies comprising the Electric Steel Founders' Research Group recently held a three-day meeting at Wernersville, Pa., at which exhaustive progress reports were presented on researches being conducted by the organization into annealing, core practice, facing practice, furnace practice and the elimination of slag from castings.

The members report that the standardization of practices has recently been ex-

tended to cover methods of chemical analysis.

The group consists of the following companies: Electric Steel Co., Chicago; Fort Pitt Steel Casting Co., McKeesport, Pa.; Lebanon Steel Foundry, Lebanon, Pa.; Michigan Steel Casting Co., Detroit, and Sivyer Steel Casting Co., Milwaukee.

INDUSTRIAL NOTES

Jenkins Vulcan Spring Co. reports that September business was the largest in the history of the company. Shipments for the month of October to date are running considerably in excess of those of the same period of September and the plant is operating 20 hours a day every day in the week with a large percentage of the increased business coming from old established accounts.

Easthampton Cork Co. plant at Easthampton, Mass., was destroyed by fire Oct. 20. The plant was bought early this year by the Silver Crown Cork Disk Co., and the new company formed. New machinery and equipment installed. It is expected the plant will be rebuilt. The company manufactures automobile brake linings.

W. J. Doughty, president of the Detroit Air Cooled Car Co., reports rapid progress is being made in preparing its plant at Wayne for production equipment. It is the intention to remove the company's office from 3745 Cass avenue to Wayne, within 45 days.

Windsor Steam Motors has opened temporary offices at 6 London Street East, Windsor, Ont. The company is a branch of the Detroit Steam Motor Corp., maker of the Trask steamer.

Batavia Rubber Co. assets at Batavia, N. Y., will be sold at receiver's sale on Nov. 9. The plant has a possible production of 500 tires a day. John Woodward is receiver.

Acme Brass Now Operating Jorgenson Waupac Factory

WAUPACA, WIS., Oct. 23—The business of the defunct Jorgenson Manufacturing Co., manufacturer of priming devices and other brass specialties for the automotive industries, is being resumed by a new corporation, under the name of Acme Brass & Metal Works, Inc. The new concern has completed the purchase of all of the assets, including plant and equipment, from the receiver of the Jorgenson company. All of the interests are new and consist of Waupaca and Appleton business men.

Officers have been elected by the Acme company as follows: President, J. M. Brown, Appleton, Wis.; vice-president, Lewis Larson, Waupaca; secretary, E. W. Nelson, Waupaca; treasurer, C. J. Pommer, Waupaca. S. K. Wood of Waupaca and B. C. Koepke of Appleton are additional directors. Wood has been designated as general sales manager.

The new company enters business with orders requiring capacity past the end of the year. An inquiry has been received from a large automotive concern for quotations on 1,500,000 small brass accessories and the outlook is regarded as most promising.

METAL MARKETS

Its dullness has become the steel market's most outstanding feature. Slowly but surely the market is turning in buyers' favor. So far there is no tangible recession in prices but if there were any buyers they would find the attitude of sellers considerably changed from what it was a few weeks ago. Then rollers experienced difficulty in securing sheet bars at \$40; to-day they are plentiful at that price and the general trend is toward a lower level. The demand for full-finished automobile sheets continues at a somewhat better rate than that in evidence for other grades of sheets. As a result most of the mills that specialize in the rolling of full-finished sheets continue to enjoy a gratifyingly large quota of orders at prices which will go far toward sweetening their year's average.

Paucity in the labor supply is still one of the producer's most vexatious problems and further wage scale increases are on the program. With the general lessening in tension the factor of stocks of steel in consumers' hands and in resellers' warehouses comes in for more consideration than it has heretofore. Until the beginning of the year's last quarter reserve holdings of steel in consumers' hands were generally looked upon as a negligible quantity. Trade opinion has undergone somewhat of a change on this score in the last few days, and there are many who believe that consumers are more adequately provisioned with steel than they are generally given credit for. While hand-to-mouth buying was the policy manifested in automotive steel purchases throughout the year, it has been impossible in all cases to carry out this policy and the very irregularity of shipments during and immediately following the strike period necessitated the taking of steel shipments when they could be gotten with the result of some accumulation of reserve stocks.

It is also obvious that there are again considerable steel stocks in the hands of resellers. Some of this material comes from overbought consumers and some of it from surplus stocks sold by the Government. Much of these holdings is off-size or off-quality.

Pig Iron.—Pig iron prices are on the return march toward more normal levels. Buyers are holding off while the market is in a declining condition, waiting for prices to reach well below \$30 level. Here and there one encounters predictions of a continuing downward slide in prices until \$25 is reached. Foreign pig iron continues to compete actively with metal of domestic origin.

Aluminum.—Automotive consumers are reported as manifesting brisk interest in sheet offerings. The domestic producer is booked to capacity on sheets and enjoying a steadily increasing demand upon its sheet rolling facilities. At the same time there are reports that the high tariff on sheets has not done away with imports of that commodity, some light gage sheets which carry heavy extras having been sold recently for importation from Europe. In the ingot market inquiries for both the last quarter of 1922 and the first quarter of 1923 are reported. Sales of 98 to 99 per cent pure virgin ingots at 20 @ 20.25c., ex New York warehouse, are reported.

Copper.—The market is rather soft, the general run of consumers being apathetic. There are, however, some of a semi-speculative turn of mind who have taken on fairly sized tonnages at 13.75c. and less.

Calendar

SHOWS

- Oct. 21-28—Washington, D. C., Annual Closed Car Salon, Convention Hall, under the auspices of the Washington Automotive Trade Association.
- Nov. 13-18—Chicago, Annual Show and Meeting of the Automotive Equipment Association.
- Dec. 3-9—New York, Eighteenth Annual Automobile Salon, Commodore Hotel.
- Jan. 6-13—New York, National Automobile Show, Grand Central Palace, under auspices of National Automobile Chamber of Commerce.
- Jan. 8-13—New York, Second National Automobile Body Builders Show, Twelfth Regiment Armory, under the auspices of the Automobile Body Builders Association.
- Jan. 27-Feb. 3—Chicago, Annual Automobile Salon.
- Jan. 27-Feb. 3—Chicago, National Automobile Show, under auspices of

National Automobile Chamber of Commerce, Coliseum and First Regiment Armory.

FOREIGN SHOWS

- Nov. 3-11—London (Olympia), Automobile Show.
- Nov. 9-19—Buenos Aires, Argentina, Annual Exhibition, Automovil Club Argentino.
- Nov. 29-Dec. 4—London (Olympia), Cycle and Motorcycle Show. British Cycle Motors, The Tower, Warwick Road, Coventry.
- Dec. 15-Jan. 2—Paris, Aeronautical Salon, Grand Palace. Chambre Syndicale des Industries Aeronautiques, 9 Rue Anatole de la Forge.
- Jan. 13-24—Brussels, Sixteenth International Automobile and Cycle Exposition, Palais du Conquanteinaire.
- May-July, 1923—Gothenburg, Sweden, International Automobile Exhibition. Sponsored by the Royal Automobile Club of Sweden.

CONVENTIONS

- Oct. 26-28—Washington, Second National Conference for the Study of Highway Engineering and Highway Transport Education.
- Nov. 14-15—Chicago, Semi-Annual Convention, Factory Service Managers, National Automobile Chamber of Commerce, La Salle Hotel.
- Jan. 15-19—Chicago, Thirteenth American Good Roads Congress and Fourteenth National Good Roads Show.
- Jan. 29-31—Chicago, Annual Meeting, Automobile Electric Association, Congress Hotel.

S. A. E. MEETINGS

- Metropolitan Section
- Nov. 16—Speaker, A. L. McNulty, Consulting Engineer, Connecticut State Motor Vehicle Commission; Subject, Regulations Governing the Use of Rural Highways.

- Dec. 14—Speaker, Charles P. Grimes, Research Engineer, H. H. Franklin Manufacturing Co.; Subject, Air Cooling in Automotive Engines.
- March 15—Speaker, William P. Kennedy, President, Kennedy Engineering Corp.; Subject, Trolley Buses and Flexible Vehicles for Street Railway Service.
- April 19—Speaker, Edw. E. La Schum, General Superintendent, Motor Vehicle Equipment, American Railway Express Co.; Subject, Engineering Features of Fleet Operation.
- May 17—Speaker, F. P. Gilligan, Secretary, Henry South Engineering Co.; Subject, Metallic Materials for Automotive Work.

Other Meetings

- Jan. 9-12—New York, Annual Meeting.
- Jan. 31—Chicago Meeting and Dinner of the Society at the Congress Hotel.

New Inflation Period Due Says Reeves After Meeting

WASHINGTON, Oct. 25—The automobile industry, and all industry in general, is due for a short "secondary period of inflation," which will not be severe and which may not last long, according to the prediction of Alfred Reeves, general manager of the National Automobile Chamber of Commerce, following a two-day conference with Government officials and members of the District Federal Reserve Board.

This secondary period of inflation, however, in Reeves' opinion, will have little effect upon the automobile industry for three reasons:

First, because the automobile industry is going to profit from "dammed up buying." These "dammed up buyers" he characterizes as those who wanted to buy automobiles last year but did not do so, waiting for prices to come down.

Second, because there is a more general use of automobiles in smaller cities, as actual necessities in the matter of transportation.

Third, because of the inadequacy of the railroad facilities, and the recent strike which taught the general business public the advantage of automotive highway transportation.

Egyptian Students Here for Study of Industry

NEW YORK, Oct. 24—A party of ten Egyptian students, six of whom will spend three years in automotive factories of this country, disembarked here to-day from the liner Majestic, being met by M. H. Hoepli, assistant chief of the Automotive Division of the Bureau of Foreign and Domestic Commerce, and Roger C. Dunn, another representative of the bureau.

The students are accredited representatives of the Egyptian government and were sent to this country to inform themselves of American business meth-

ods so that later they may take posts in the transport and communications services of their home country. The party will go to Washington, but later will be assigned to various manufacturing plants for their educational work.

The six young men going to the automotive plants will specialize on maintenance and operation work. The remaining four will be assigned to studies relating to locomotives, Diesel and other marine engines and telephones.

Their coming to this country was under a plan evolved by Secretary of Commerce Hoover to provide technical instruction here of official representatives of other countries. Arrangements in connection with the automotive industry are being made by Gordon Lee, head of the automotive division.

Police Believe They Have Head of Car Theft Ring

DETROIT, Oct. 23—Local police believe that, in the arrest of Edward J. Sweeney, they have reached the head of a gang that has stolen many high priced cars recently.

Early this fall Sweeney, it is said, went to New York and presented an option on the purchase of 4000 Cadillacs of an older model at an extremely low price which he claimed was given him by the General Motors Corp. His explanation, it is asserted, was that Cadillac planned to produce a new model that would make the present obsolete and the cars he had an option on would be made from parts of the present model. The cars were to have used tires and speedometers registering 500 to 1000 miles to prevent dealer antagonism.

A sample car interested O. B. Richards & Co. into offering \$4,600,000 for the lot. An attempt to insure this car, which a friend of the firm bought, caused suspicion, resulting in the arrest of Sweeney under the Dyer Act.

Crisp Fall Weather Helps Sales of Cars in New York

NEW YORK, Oct. 23—Crisp fall weather has helped passenger car sales in the metropolitan territory to keep going at a high level for this time of the year. The bulk of the demand, naturally, is for closed cars, but owing to the fact that most dealers are short of these models, there is better than a normal demand for open cars at this time of the year.

Only dealers in a few lines are getting closed cars in sufficient volume to make immediate deliveries. Railroad embargoes and delays, which are in effect throughout the eastern section of the country, are aggravating closed car shortage conditions, due to lack of production facilities, and dealers in some of the more popular lines are having to accept orders with delivery dates weeks and in some cases months off.

The used car market has kept pace with that for new cars. Only a minority of dealers are overstocked with used cars. As might be expected, the demand for closed used cars is brisk, and there are practically no accumulations of stock in this class.

The truck market is showing gradual but steady recovery. Dealers in the more popular makes report sales running 50 to 100 per cent of what they were a year ago.

FORD USING RADIO

DETROIT, Oct. 24—The Ford Motor Co. is using radio communication on its railroad between Dearborn and Springfield, its two main terminals. Consideration is being given to the practicability of using the radio as a means of communication between the plants and branches of the Ford company, this involving the use of a code or the perfection of tuning so there would be no interruption of service.